

**3.0 Projects
Overview**

Projects Overview

The ITS/CVO program is the umbrella for more than 50 public, private, and public/private initiatives.

More than 50 government and public/private initiatives are underway to develop, test, and deploy elements of the ITS/CVO program. This chapter reviews the leading projects, focusing on their objectives and general approach. Appendix A presents a detailed discussion of the component projects, including their purpose, participants, approach, results to date, deployment plans, and costs.

ITS/CVO safety assurance projects are discussed first, followed by credentials administration, electronic screening, and carrier operations projects.

National ITS/CVOP Program Framework

Program Areas

Safety Assurance

- Access to driver, vehicle, and carrier safety information
- Automated inspections and reviews
- Onboard monitoring

Credentials Administration

- Electronic credentialing
- Electronic one-stop shopping
- Interagency data exchange
- Interstate data exchange

Electronic Screening

- Automated weight and credentials screening (fixed site)
- International electronic border clearance

Carrier Operations

- Fleet and vehicle management
- Traveler information systems
- Hazardous materials incident response

CVISN (Technical Infrastructure)

Mainstreaming (Organizational Infrastructure)

Program Framework

The ITS/CVO program includes projects in four broad categories: safety assurance, credentials administration, electronic screening, and carrier operations. Cross-cutting initiatives will provide the technical and organizational infrastructure to connect these efforts.

The national ITS/CVO program comprises dozens of initiatives covering multiple functions. These initiatives represent the efforts of individual states, consortia of states, the Federal government, individual motor carriers, and industry associations. The ITS/CVO program is developing capabilities in four broad areas:

- **Safety Assurance** - Programs and services designed to assure the safety of commercial drivers, vehicles, and cargo. These include automated roadside safety inspections and carrier reviews, safety information systems, and onboard safety monitoring.
- **Credentials Administration** - Programs and services designed to improve the deskside procedures and systems for managing motor carrier regulation. These include electronic application, purchasing, and issuance of credentials, as well as automated tax reporting and filing.
- **Electronic Screening** - Programs and services designed to facilitate the verification of size, weight, and credential information. These include the automated screening of commercial vehicles at fixed weigh stations and international border crossings.
- **Carrier Operations** - Programs and services designed to reduce congestion and manage the flow of commercial vehicle traffic. These include travel advisory services and hazardous materials incident response services. The private sector is taking leadership in the deployment of fleet and vehicle management technologies and systems that improve motor carrier productivity.

The Commercial Vehicle Information Systems and Networks (CVISN) initiative will provide a technical infrastructure to link these projects and information systems, including common standards for electronic communication among participating agencies and carriers. The mainstreaming initiative (described in Chapter 4.0) will provide the organizational infrastructure to support ITS/CVO deployment.

ITS/CVO Safety Assurance Program Area

- Objective
 - Improve highway safety by focusing enforcement resources on high-risk carriers, drivers, and vehicles
 - » Improve deskside and roadside access to safety information
 - » Improve safety inspection and review processes
 - » Enhance ability to monitor the en-route safety status of the vehicle and driver
- Expected benefits
 - Reduced frequency and severity of accidents
 - Reduced compliance costs for safe and legal carriers
 - More efficient enforcement operations

Safety Assurance

ITS/CVO safety assurance projects seek to improve highway safety by focusing enforcement resources on high-risk carriers, drivers, and vehicles.

ITS/CVO safety assurance projects include the collection and exchange of information about safety performance, as well as the assessment and enforcement activities undertaken by the government to improve the safety of commercial vehicle operations. Current safety assurance activities are not completely effective:

- The emphasis of inspections too often is on the vehicle's mechanical condition and the driver's credentials, rather than on the driver's performance and the carrier's safety record.
- Inspectors are not able to screen comprehensively for high-risk carriers, drivers, and vehicles.
- Roadside inspection officers often lack timely access to data on outstanding out-of-service orders and safety violations in other states.

The objective of the ITS/CVO safety program is to improve highway safety by targeting resources on the carriers, drivers, and vehicles who pose the highest risk to motorists. The primary benefit will be a reduction in the frequency and severity of commercial vehicle accidents. In addition, the safety program will reduce compliance costs for safe and legal carriers, and will enable state enforcement agencies to improve the efficiency of their operations.

Safety Assurance Projects

Technical Approach

	Automation	Networking	Process Change
MCMIS/SAFETYNET		●	
CDLIS		●	
100/200 MCSAP Site	●	●	
SAFER		●	●
SafeStat	●	●	●
I-95 Roadside Safety/Safety Management	●	●	●
MN/WI Out of Service Operational Test	●	●	
Idaho Out of Service Operational Test	●		
Brake Testing	●		
Automated Safety Assessment Program	●		
Brake Monitors/Electronic Brake Systems	●		
Black Box	●		
Smart Card	●		
Driver Fatigue	●		
Colorado Downgrades	●		

Safety Assurance (continued)

The ITS/CVO safety program will shift the emphasis of safety assurance from paper to performance, and from random to rational.

The underlying approach to the **ITS/CVO** safety program is to enable safety inspectors to target their resources on the carriers, drivers, and vehicles that are at the highest risk. This capability will be achieved through a series of research projects, operational tests, and deployment activities as follows:

- **Automation** – Deploy laptop computers at inspection sites to enable roadside personnel to access data and enter inspection results. Develop software to screen carriers for inspection. Develop diagnostic technologies to test the brakes and other vehicle components. Develop onboard technologies to monitor the safety status of the vehicle, driver, and cargo.
- **Networking** – Develop linkages among existing and planned safety information systems to share data among agencies and states. Link inspection processes to onboard diagnostics and computers.
- **Process Change** – Enable safety inspectors to target resources on high-risk carriers, drivers, and vehicles. Coordinate safety enforcement among states. Encourage carriers to develop safety management programs.

Safety Assurance Projects

Stage of Development

	Research/Planning	Testing	Deployment
MCMIS/SAFETYNET			●
CDLIS			●
100/200 MCSAP Site			●
SAFER	●	●	
SafeStat	●	●	
I-95 Roadside Safety/Safety Management	●		
MN/WI Out of Service Operational Test		●	
Idaho Out of Service Operational Test		●	
Brake Testing		●	
Automated Safety Assessment Program	●		
Brake Monitors/Electronic Brake Systems	●	●	
Black Box	●		
Smart Card	●		
Driver Fatigue	●	●	
Colorado Downgrades		●	

Safety Assurance (continued)

The most advanced safety projects are safety information systems.

The greatest progress to date in ITS/CVO safety applications has occurred in safety information systems, such as the Commercial Driver's License Information System (CDLIS) and the Motor Carrier Management Information System (MCMIS). In addition, notable progress has been made in the roadside deployment of laptop computers and inspection software through the 100/200 Motor Carrier Safety Assistance Program (MCSAP) Site project.

The first stage of the development of safety information systems has been successful at building central repositories of data on driver and carrier performance records. The next steps are to provide links among these separate systems, and to facilitate the timely use of these data by roadside inspection officers and deskside credential administrators.

In contrast, the enabling technologies for automated inspection and onboard driver monitoring systems are still under development. Work in these areas is promising, but products and systems are not expected to be available for widespread deployment for several years.

Safety Assurance Projects

Geographic Scope

	State	Regional	National
MCMIS/SAFETYNET			●
CDLIS			●
100/200 MCSAP Site			●
SAFER			●
SafeStat			●
I-95 Roadside Safety/Safety Management		●	
MN/WI Out of Service Operational Test		●	
Idaho Out of Service Operational Test	●		
Brake Testing			●
Automated Safety Assessment Program			●
Brake Monitors/Electronic Brake Systems			●
Black Box			●
Smart Card			●
Driver Fatigue			●
Colorado Downgrades	●		

Safety Assurance (continued)

Most of the ITS/CVO safety projects are national initiatives.

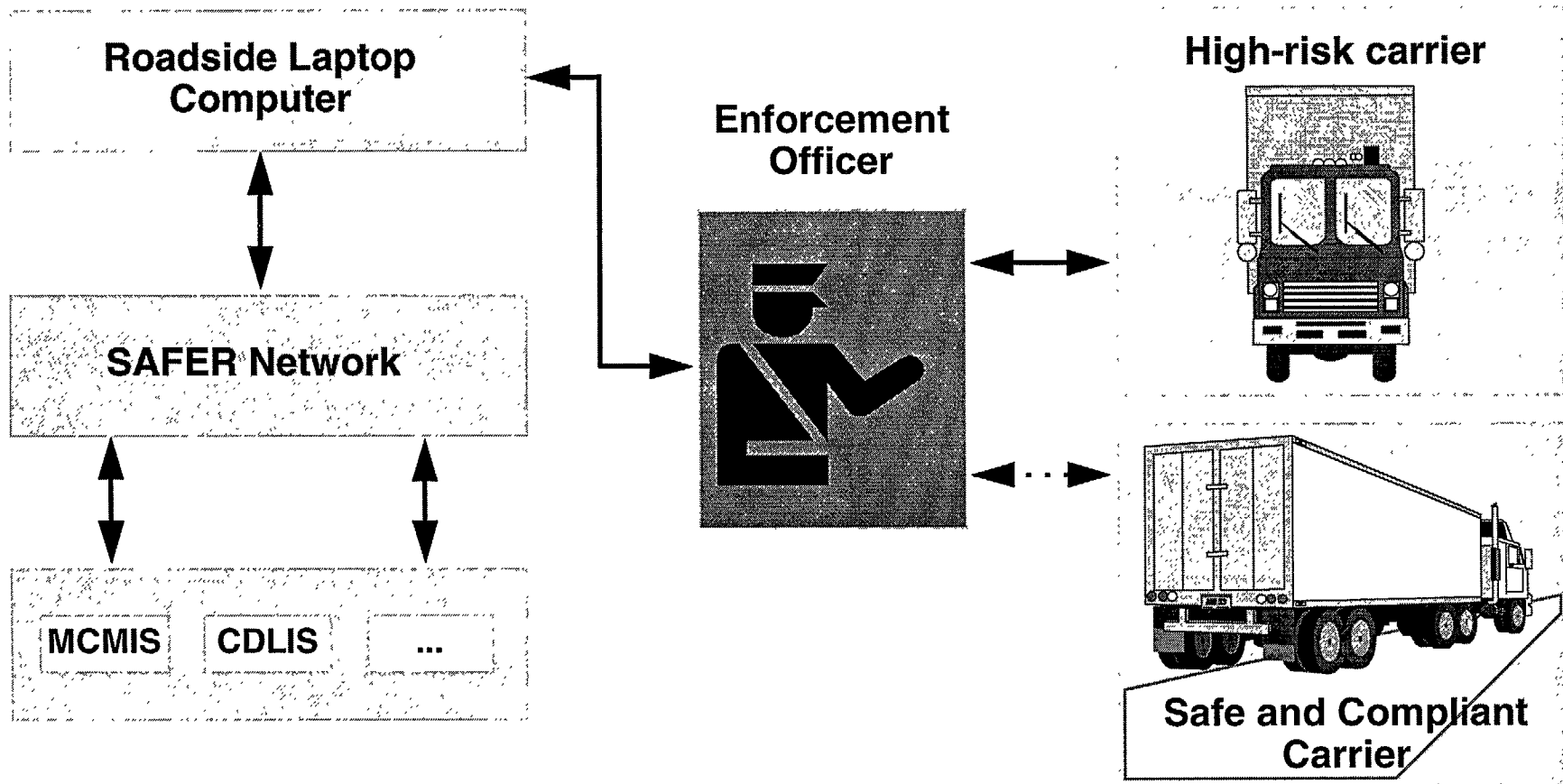
Most of the major ITS/CVO safety projects have been developed at the national level, reflecting the FHWA's commitment to assuring motor carrier safety nationwide:

- Several information systems, including the MCMIS, the CDLIS, and the new Safety and Fitness Electronic Records (SAFER) system, have been designed to provide nationwide coverage.
- The FHWA's 100/200 MCSAP Site project is providing the platform for the deployment of computers and software at roadside inspection sites across the nation.
- The FHWA and National Highway Traffic Safety Administration (NHTSA) are sponsoring research and development of technologies for automated brake monitoring and testing, driver alertness monitoring, and other onboard diagnostic tools.

The I-95 Corridor Coalition recently endorsed operational tests of a regional roadside safety system and a regional safety management system. These regional systems will build upon the existing 100/200 MCSAP Site and SAFER initiatives, and may become models for other regional efforts.

Technologies to verify that out-of-service violations have been corrected as ordered are being developed at the state and regional levels, although they eventually should be available for nationwide deployment. Highway safety warning systems, such as systems to advise commercial drivers of safe operating speeds on steep downgrades, are being developed at the local level.

Safety Assurance Operational Concept



Safety Information

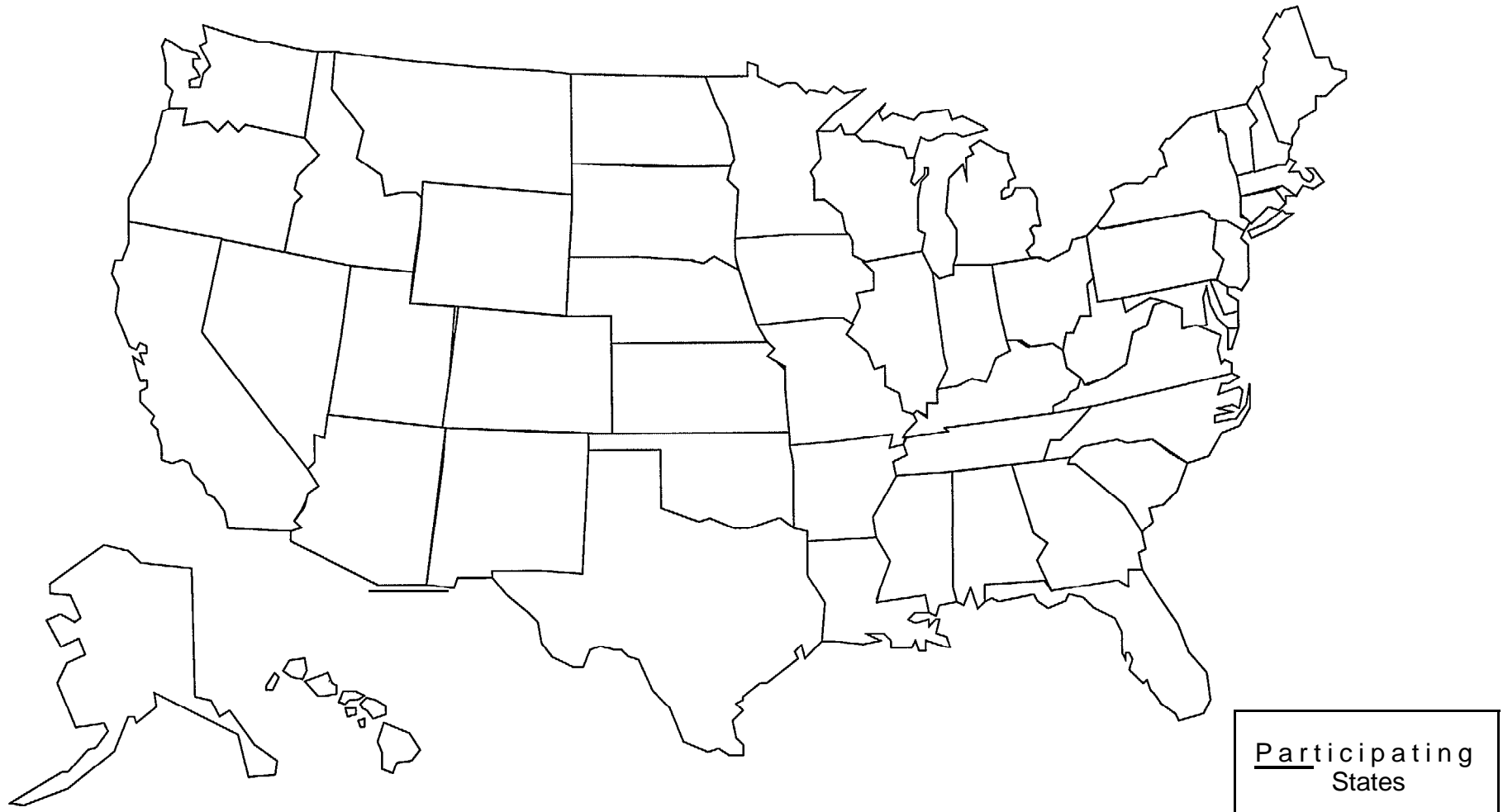
Existing information systems maintain driver, vehicle, and carrier safety records. However, these systems are not linked, and are unable to provide timely data to roadside personnel.

Over the past several years, a major thrust of safety assurance activities has been the development of a series of information systems with data on driver, vehicle, and carrier performance records:

- The **Motor Carrier Management Information System (MCMIS)**, maintained by the FHWA's Office of Motor Carriers (OMC), is a central repository of safety data on interstate motor carriers. The FHWA uses MCMIS data to set priorities and targets for conducting safety and compliance reviews, to support state and Federal investigations, and to make safety fitness ratings available in response to public and private entities. The MCMIS is the repository for data on the MCSAP inspections performed by the states. It will be expanded in 1997 to include driver and vehicle data.
- The **SAFETYNET**, also maintained by the OMC, is a distributed information system developed to manage and share safety data among the states and the FHWA. The objective of the SAFETYNET is to provide a single system for both Federal and state agencies to enter and exchange data electronically. The SAFETYNET provides electronic access to MCMIS data from all Federal field offices and state MCSAP agencies. States use the SAFETYNET software to maintain data locally and to transfer data to the MCMIS.
- The **Commercial Driver's License Information System (CDLIS)** serves as a national database on commercial driver licenses (CDL). The objectives of the CDLIS are to ensure that each driver has only one CDL, that all convictions are made part of the driver's history in the licensing state, and that conviction data are transferred between states. The CDLIS is distributed system that is connected to the 51 licensing jurisdictions by AAMVAnet, a national electronic communications network that is managed by a subsidiary of AAMVA.

Although these information systems have benefited the states and the carriers, their effectiveness has been limited by the limited linkages with other aspects of state CVO programs (e.g., vehicle registration), as well as by the difficulty in providing timely, electronic access to roadside inspection officers.

100/200 MCSAP Site Project



Safety Information (continued)

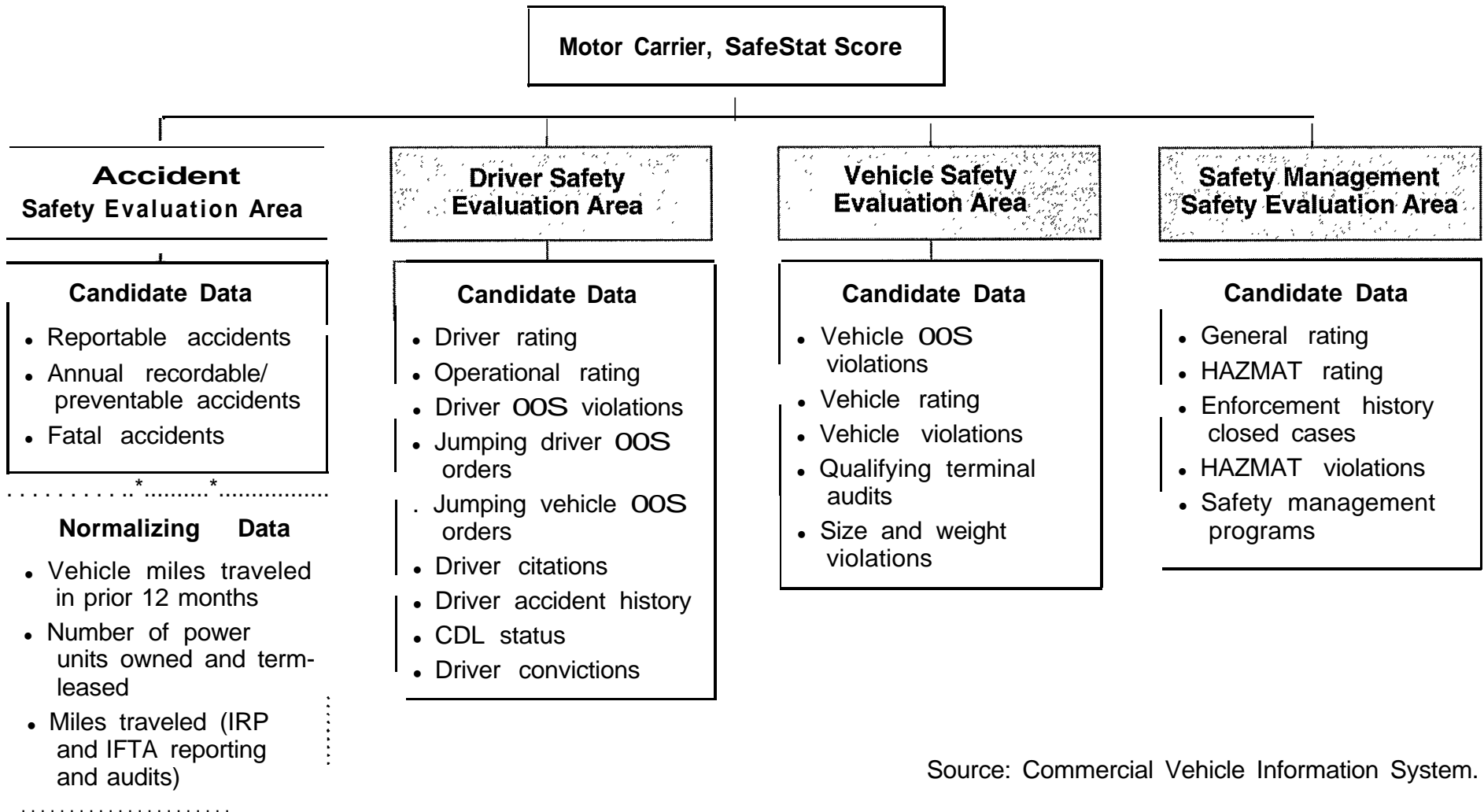
A series of projects will provide electronic access to carrier safety and driver license data from roadside inspection sites.

Through a series of projects under the umbrella of the **100/200 MCSAP Site Project**, the FHWA and the states will provide electronic access to carrier safety and driver license data from roadside inspection sites. The U.S. Congress mandated in 1994 that the electronic access be available at 200 MCSAP sites by mid-1997, a target that already is close to fulfillment.

The goal of these projects is to use information systems to target inspection resources to carriers with unknown or poor safety records, to improve driver license status checks, and to record inspection results electronically from the roadside. The projects include the following:

- **The Roadside Data Technology Project (RDTP)** developed and tested generic software, known as ASPEN, for use by safety inspectors in performing roadside inspection using pen-based computers. The ASPEN software includes the capability to link with the SAFETYNET or the CDLIS. The RDTP project also is developing an inspection selection algorithm that will provide inspectors with information on the carrier's safety record, along with a recommendation regarding whether an inspection is appropriate.
- **The Safety and Fitness Electronic Records (SAFER)** system will provide access from fixed and mobile inspection sites to the data residing within Federal and state motor carrier safety information systems, such as the SAFETYNET, the MCMIS, and the CDLIS. The SAFER will provide an authoritative source for motor carrier identification information, and will replace the periodic physical download of safety information with a more frequent electronic transmittal.
- AAMVAnet, Inc. is developing the capability for MCSAP personnel to access the CDLIS using microcomputer systems and the **AAMVAnet communications system**. This access will provide inspection officers with rapid verification of the status of a CDL.

Safety Information



Source: Commercial Vehicle Information System.

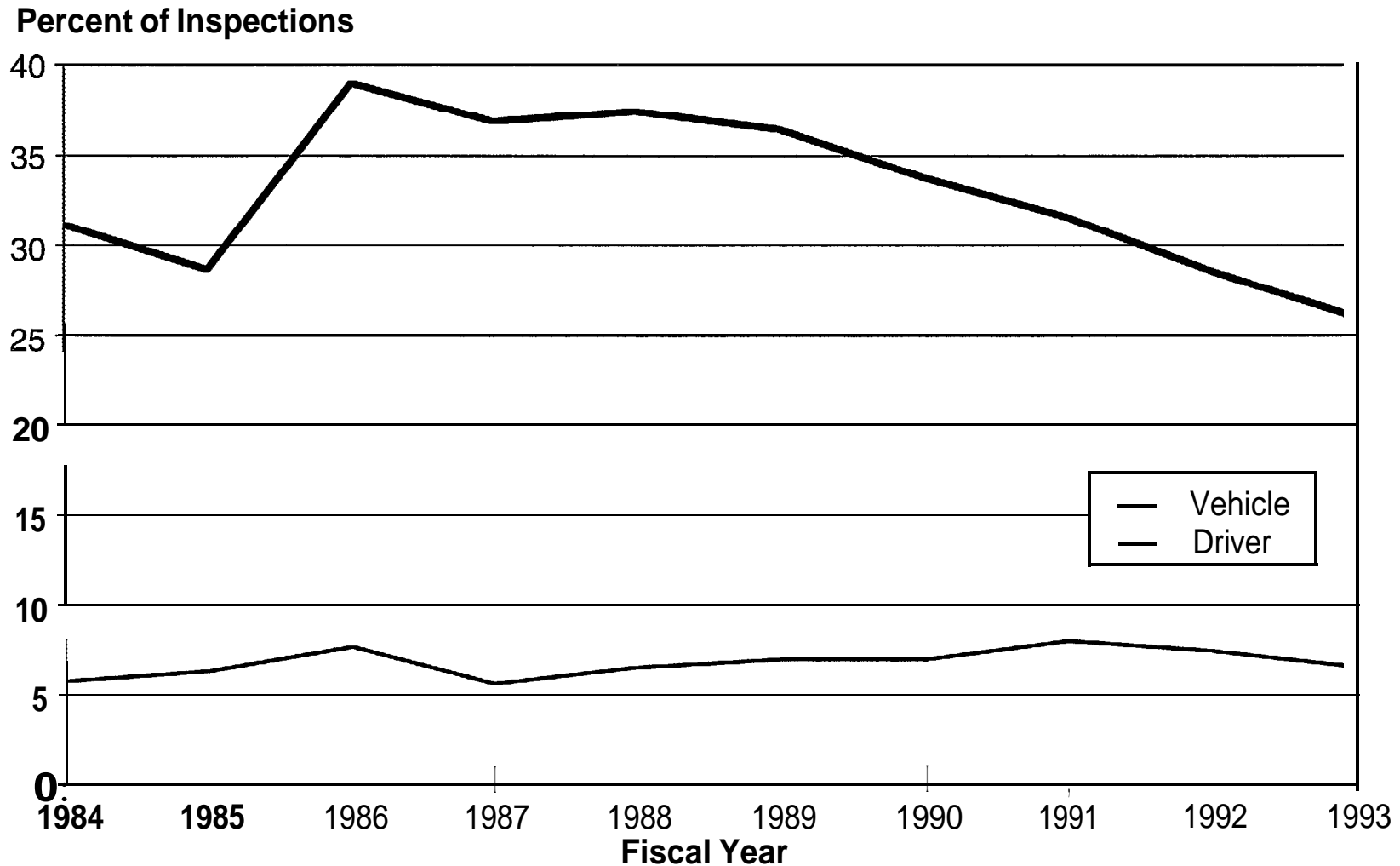
Safety Information (continued)

The ITS/CVO program is developing decision support tools to assess the safety performance of carriers, vehicles, and drivers.

In parallel with the improvement in the availability of safety information, the ITS/CVO program also is developing improved decision support tools to assess the safety performance of carriers, vehicles, and drivers.

- The 100/200 MCSAP Site Project developed an **Inspection Selection System (ISS)** to determine if a roadside inspection is appropriate for a particular vehicle. The algorithm considers the prior frequency and results of inspections and reviews for the vehicle and carrier.
- **Safety ratings** are determined by the FHWA during on-site reviews of carrier operations. The rating process assesses whether the carrier's operations are consistent with safety fitness standards. The factors considered include safety management controls, the frequency and severity of regulatory violations, and the frequency and severity of accidents.
- **The Safety Status Measurement System (SafeStat)** is being implemented in association with the Commercial Vehicle Information System (CVIS) project as a process to measure safety fitness. The SafeStat assesses a carrier in four broad areas: accidents, driver, vehicle, and safety management. The SafeStat provides for continuous assessment of carrier safety fitness. The Motor Carrier Safety Improvement Process (MCSIP) uses SafeStat results to determine which carriers should receive warning letters, become subjects of compliance reviews, or have their registration suspended or revoked.

Vehicle and Driver Out-of Service Rates



Source: FHWA Office of Motor Carriers.

Out-of-Service Verification

Two separate projects are developing methods for verifying compliance with out-of-service orders following driver or vehicle safety inspections.

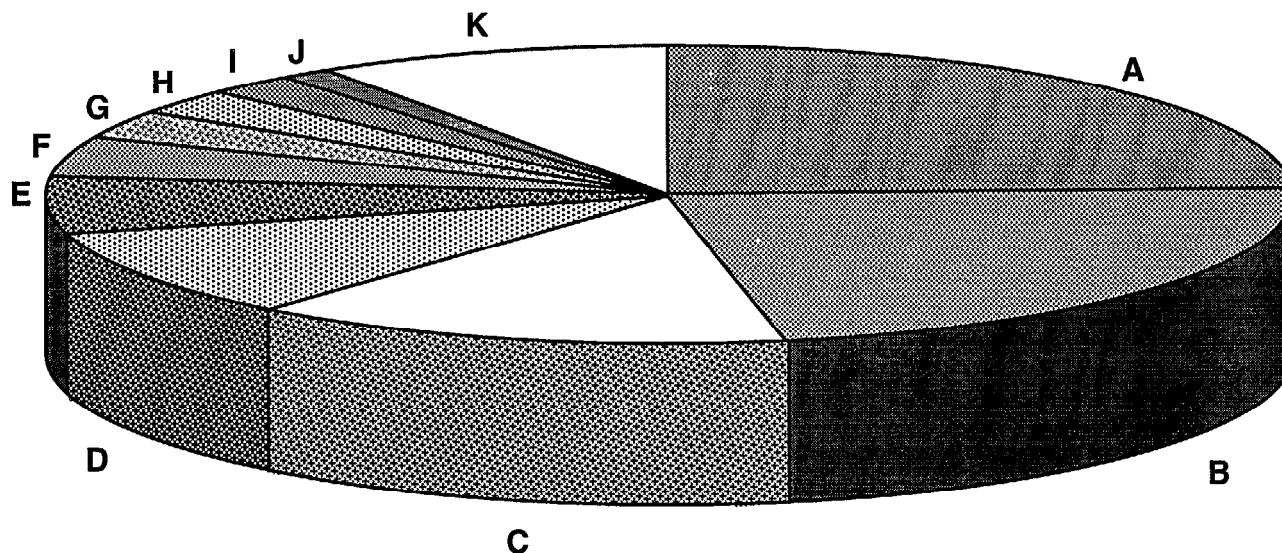
Safety inspectors place approximately 26 percent of commercial vehicles and 7 percent of drivers out of service due to the risk they pose to the public. Ensuring compliance with out-of-service orders is difficult because it usually is not practical for an enforcement official to remain at an inspection site until a violation is corrected. Studies have estimated that 12 percent of out-of-service drivers and vehicles return to the road without making the required corrections.

The ITS/CVO program will develop systems to verify compliance with out-of-service orders. Verification can occur at the site where the vehicle or driver was removed from service, at a subsequent inspection site, or by the responsible carrier through self-certification. Two operational tests are demonstrating methods for verifying compliance with out-of-service orders:

- **Minnesota** and **Wisconsin** are teaming to design a system for automatic, real-time out-of-service verification at several inspection sites along Interstates 90 and 94. The system will use video identification equipment and real-time databases to share information on out-of-service vehicles among states.
- **Idaho** is evaluating several approaches to assuring compliance with out-of-service orders. The project will use various types of vehicle transponders and automated license plate identification. Roadside inspection sites will be equipped with an alarm system that is activated when an out-of-service vehicle attempts to leave.

These operational tests will be completed in 1997. The test results will be used to develop services for deployment in other states. It is expected that increased compliance not only will increase highway safety by keeping unsafe vehicles and drivers off the road, but also will increase agency productivity by freeing inspectors from surveillance duties.

Vehicle Out-of-Service Violations by Type, 1993



A - Brake Adjustment (24%)

B - Brake Other (23%)

C - Lights (14%)

D - Tires (10%)

E - Suspension (7%)

F - Wheel, Studs, Clamps (4%)

G - Frames (3%)

H - Steering Mechanism (3%)

I - Coupling Devices (2%)

J - Fuel System (1%)

K - All Other (9%)

Source: FHWA Office of Motor Carriers.

Automated Inspections and Reviews

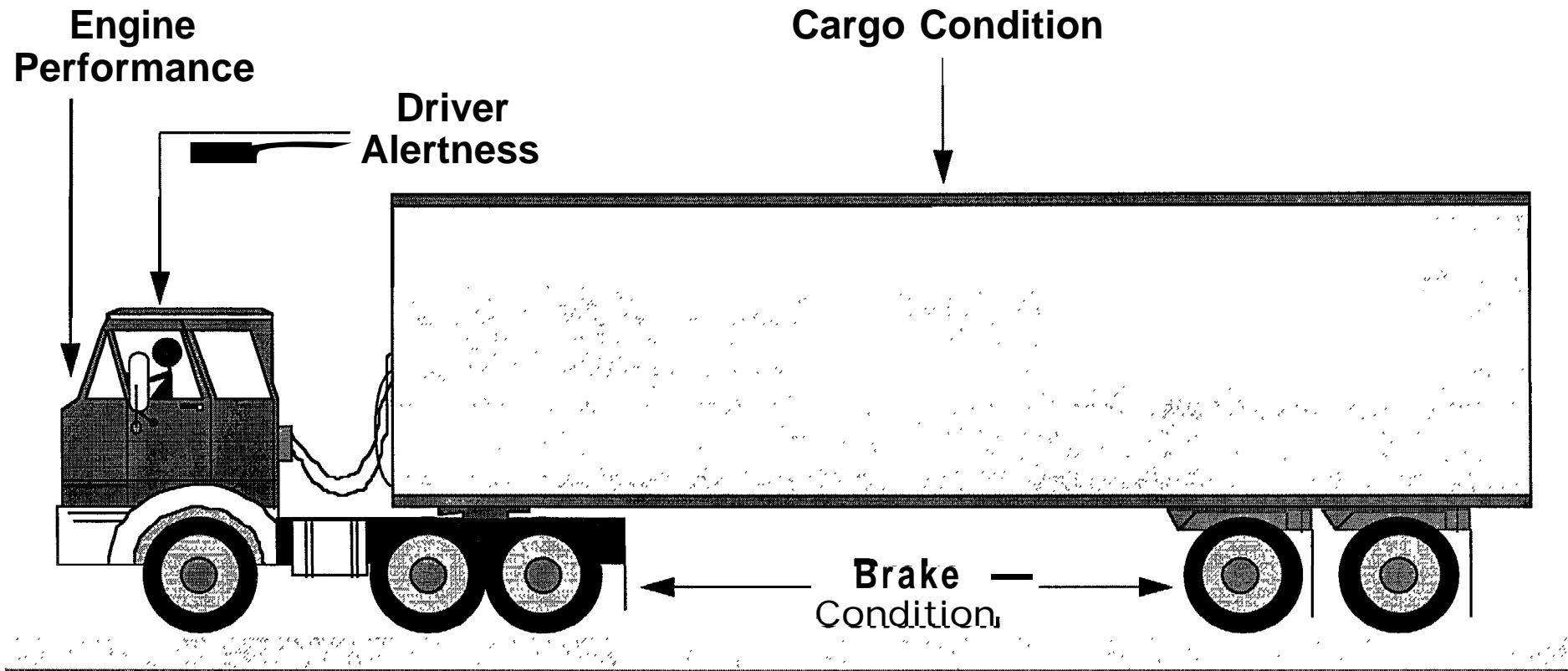
Highway safety also will be enhanced through automating the inspection process. The initial focus will be on brake testing.

Another element of the ITS/CVO safety assurance program will be to automate aspects of driver and vehicle safety inspections and carrier safety reviews. The early focus of the efforts will be on brake problems, which account for nearly half of the vehicle violations cited during safety inspections. The FHWA is sponsoring a **Brake Testing** project to develop, evaluate, and implement automated systems to inspect the brakes of a commercial vehicle without requiring an inspector to crawl underneath the vehicle. The project will establish out-of-service criteria based on the inspection results.

Future research is likely to focus on emissions testing. Results from these and other research projects will be used to develop and deploy automated inspection systems on a nationwide basis. Eventually, these systems will be linked to onboard diagnostic systems to produce a comprehensive inspection.

In addition, attention will be devoted to developing methods to automate the safety and compliance reviews that generally take place at a carrier's terminal. **The Automated Safety Assessment Program (ASAP)** will provide eligible motor carriers with software to help prepare the collection and input of data required for a safety audit. The data will be downloaded to the OMC for validation, analysis, and issuance of a safety rating. A pilot test of the software will begin in 1997.

Onboard Safety Monitoring



Onboard Safety Monitoring

In-vehicle technologies also will improve safety by monitoring the performance of key equipment such as the brakes.

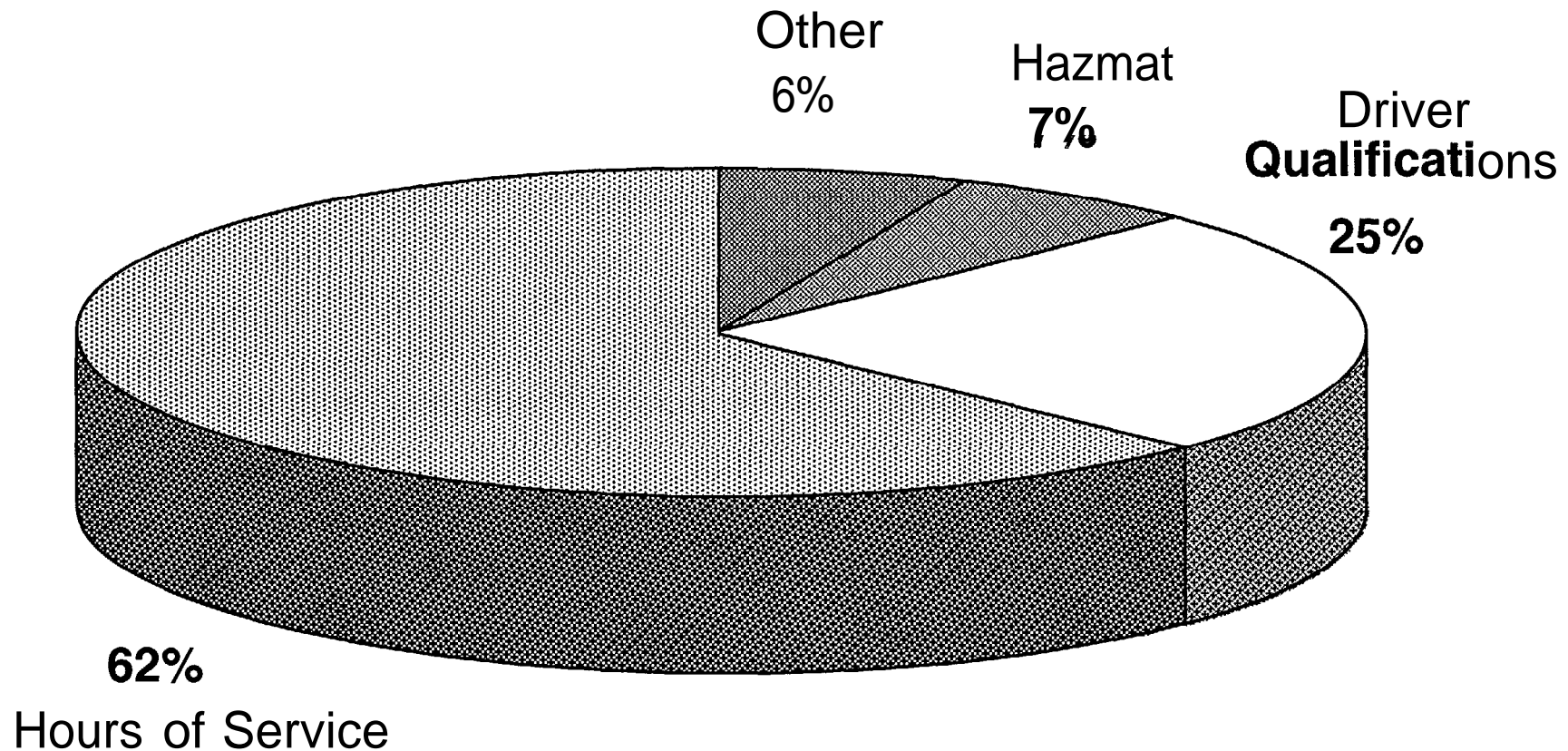
Several initiatives are exploring onboard monitoring of vehicle condition:

- Since 1996, manufacturers are equipping all new heavy-duty truck engines with electronic controls built using the Society of Automotive Engineer's (SAE) J1939 standard for in-vehicle communication. This "databus" will provide a communications infrastructure within the truck – a vehicle-level "Intranet" – that will support the integration of data from engine controls, communication systems, onboard monitors, and other instruments.
- The National Highway Traffic Safety Administration (NHTSA) has sponsored research on the feasibility of adding automatic braking equipment to heavy commercial vehicles.
- The FHWA is sponsoring research to develop onboard brake monitoring devices and electronic brake systems.
- With funding from the FHWA, the Sandia National Laboratory is studying the feasibility of placing a "black box" on commercial vehicles for accident reconstruction, similar to the recorders currently used on commercial aircraft.
- The FHWA also is sponsoring research to develop "Smart Card" prototypes that would provide real-time data on the driver's license, cargo, and vehicle condition.

These research projects will provide guidance for developing and deploying onboard safety monitoring equipment. In the late 1990s, the ITS/CVO program will develop a prototype and pilot test of an integrated in-vehicle monitoring system that combines brake monitors, a black box, and a Smart Card. This system also will be linked to roadside safety inspections.

Motor Carrier Enforcement Activity

Percent of Counts Cited, Fiscal Year 1993



Source: FHWA Office of Motor Carriers.

Onboard Safety Monitoring (continued)

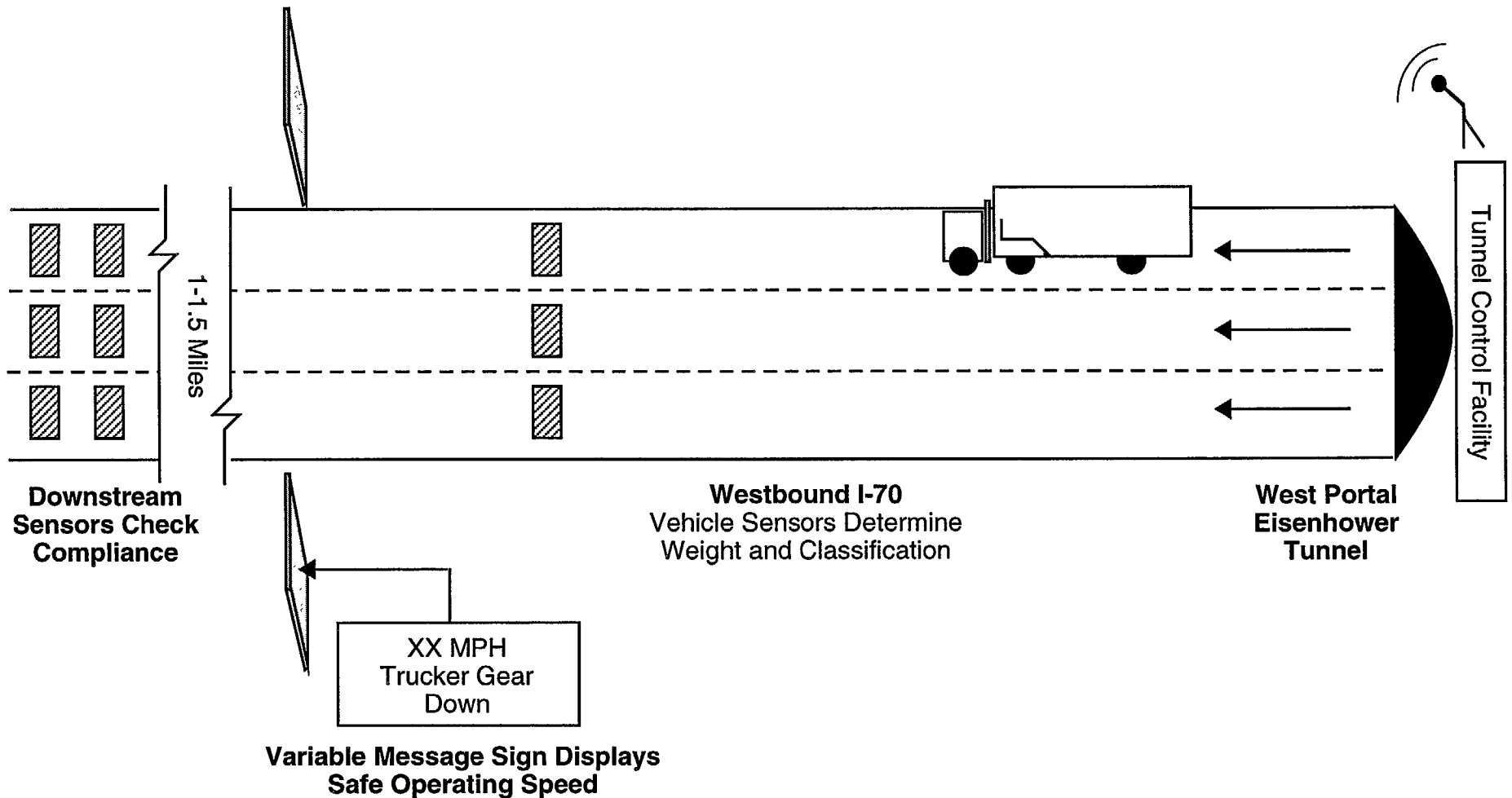
Onboard systems also will monitor the performance of the driver.

Driver fatigue and error are the leading causes of commercial vehicle accidents today. Through a series of research projects and operational tests, the ITS/CVO program is developing the capability to monitor driver performance and avert potential accidents:

- In conjunction with the American Trucking Associations, the FHWA is sponsoring a series of projects to develop methods for detecting driver fatigue and providing appropriate countermeasures. The Driver Fatigue and Alertness study evaluated in-vehicle systems to detect and offset driver fatigue. The Onboard Driver Monitoring/Fitness for Duty Testing project is demonstrating the use of onboard lane-tracking devices to monitor driver performance and detect possible fatigue.
- The NHTSA recently completed the Heavy Vehicle Driver Workload Assessment project, which developed protocols for measuring driver workload and evaluating the impact of high-technology systems on driver performance.
- The NHTSA is developing a prototype for an in-vehicle system that continuously monitors driver performance, detects drowsiness, and alerts the driver.

The results of these projects will be used to develop a pilot onboard driver monitoring device. In addition, the findings will be used to develop educational materials for the motor carrier industry, and to explore the potential for changes in hours-of-service regulation.

Highway Warning Systems



Source: Colorado Dynamic Downhill Truck Speed Warning System.

Highway Warning Systems

Several projects are developing systems to warn commercial drivers about hazardous roadway conditions, and to make recommendations about safe speeds.

A final element of the ITS/CVO safety assurance program is the development of systems to alert commercial drivers about potentially hazardous driving conditions. A particular focus is on recommending safe speeds for steep downgrades:

- The Colorado DOT, in cooperation with the FHWA, developed the **Dynamic Downhill Truck Speed Warning System** to reduce the severity and frequency of downgrade truck accidents by increasing driver awareness of, and compliance with, safe downhill speeds. The system is operating on Interstate 70 west of the Eisenhower Tunnel. The system weighs and classifies trucks using WIM and AVC technology; calculates a safe speed based on the vehicle type, vehicle weight, road grade, and road conditions; and displays the recommended speed on a variable message sign.
- The Oregon Green Light project includes the development of a similar **Downhill Speed Information System**.

ITS/CVOCredentials Administration Program Area

- **Objective**
 - **Streamline credentials and tax administration**
 - » **Enable electronic credentialing and tax filing**
 - » **Enhance interagency and interstate data and funds exchange**
 - » **Provide credentials information to authorized officials**
- **Expected benefits**
 - **Reduced cost and administrative effort for both agencies and carriers**
 - **Improved regulatory compliance**

Credentials Administration

ITS/CVO administration projects seek to streamline motor carrier and tax regulatory procedures, reducing costs for both agencies and motor carriers.

ITS/CVO credentials administration projects address transactions such as applying for, reviewing, and issuing credentials; paying taxes and fees; managing information about credential and tax payment status; and conducting other administrative functions associated with these activities. These projects address the following credentials:

- Business – operating authority and insurance registration;
- Vehicle – registration, title, fuel taxes, and oversize/overweight permits;
- Driver – driver’s license; and
- Cargo – hazardous materials registrations and permits.

Current credentials administration procedures are complex and often redundant, driving up the cost of doing business for both states and carriers:

- Each state has a unique regulatory system. Carriers must comply with the regulations of each state in which they operate.
- Responsibility for motor carrier regulation is spread among five or six agencies in the typical state. Too often, these agencies operate in virtual isolation.
- Interstate data and funds exchange are cumbersome and inefficient.

The objective of the ITS/CVO credentials administration program is to streamline credentials and tax procedures. The expected benefits include reduced operating costs and administrative effort for both agencies and carriers, as well as improved regulatory compliance by carriers.

Credentials Administration Projects

Technical Approach

	Automation	Networking	Process Change
I-95 Electronic Registration	●	●	
Electronic Tax Filing (AMASCOT)	●	●	
International Fuel Tax Agreement (IFTA)			●
International Registration Plan (IRP)			●
Regional OS/OW Permitting Agreements			●
Base-State Hazmat Agreement			●
Carrier Registration System (CRS)			●
Regional Electronic One-Stop Shopping	●	●	●
Commercial Vehicle Information Systems (CVIS)		●	●
Fuel Tax Data Sharing	●	●	
Regional Processing Center	●	●	
IFTA/IRP Clearinghouses	●	●	

Credentials Administration (continued)

ITS/CVO credentials administration projects are moving transactions from paper to electronic media, creating the opportunity for states to change the ways they regulate carriers.

The underlying approach to the ITS/CVO credentials administration program is to enable government agencies and motor carriers to conduct business transactions electronically. This capability will be achieved through a series of research projects, operational tests, and deployment activities, as follows:

- **Automation** – Develop software and information systems for electronic registration, mileage reporting, and tax and fee collections.
- **Networking** – Develop electronic data interchange and electronic funds transfer capabilities for the movement of data and money between agencies and carriers. Develop “clearinghouses” to manage data and funds exchange among states.
- **Process Change** – Develop “one-stop shopping” capabilities for carriers to obtain permits for multiple states through a single source. Develop base-state agreements for the administration of credentials other than registration and motor fuel tax accounts. Begin the reengineering of regulations and procedures.

These projects address three areas: transactions between motor carriers and agencies, transactions among agencies within the same state, and transactions among states.

Credentials Administration Projects

Stage of Development

	Research/Planning	Testing	Deployment
I-95 Electronic Registration	●	●	
Electronic Tax Filing (AMASCOT)		●	
International Fuel Tax Agreement (IFTA)			●
International Registration Plan (IRP)			●
Regional OS/OW Permitting Agreements	●		●
Base-State Hazmat Agreement	●	●	
Carrier Registration System (CRS)	●		
Regional Electronic One-Stop Shopping		●	
Commercial Vehicle Information Systems (CVIS)		●	
Fuel Tax Data Sharing		●	
Regional Processing Center			●
IFTA/IRP Clearinghouses	●		

Credentials Administration (continued)

Most credentials administration services are still in the planning or testing stages.

The greatest progress in the credentials administration area has occurred through the development of base-state agreements to administer interstate vehicle registration (the International Registration Plan [IRE]) and motor fuel taxes (the International Fuel Tax Agreement [IFTA]). Both of these agreements have expanded to national coverage. The final states joined in 1996, as mandated by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Small groups of states have implemented regional oversize/overweight permitting agreements.

Most other major administration projects are in the planning or testing stages. Operational tests are underway to demonstrate electronic registration, electronic tax filing and payment, multistate hazardous materials permitting, and regional electronic one-stop shopping. Additional multistate agreements, including interstate clearinghouses for the exchange of credential fees and information, are under development.

The capability for the interagency exchange of information within a single state is the least advanced element of the credentials administration program, but is being advanced through the Commercial Vehicle Information System (CVIS) pilot test.

Credentials Administration Projects

Geographic Scope

	State	Regional	National
I-95 Electronic Registration		●	
Electronic Tax Filing (AMASCOT)		●	
International Fuel Tax Agreement (IFTA)			●
International Registration Plan (IRP)			●
Regional OS/OW Permitting Agreements		●	
Base-State Hazmat Agreement			●
Carrier Registration System (CRS)			●
Regional Electronic One-Stop Shopping		●	
Commercial Vehicle Information Systems (CVIS)			●
Fuel Tax Data Sharing			●
Regional Processing Center		●	
IFTA/IRP Clearinghouses			●

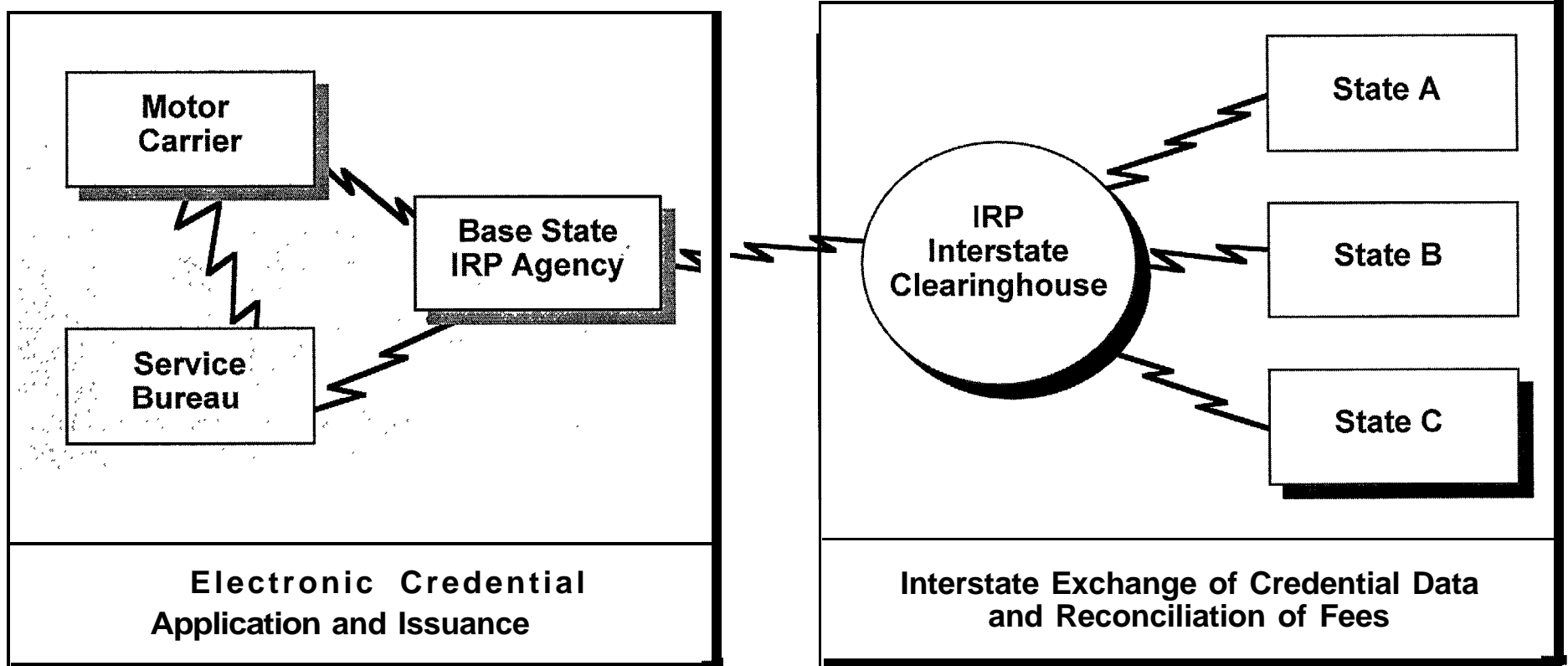
Credentials Administration (continued)

The major ITS/CVO credentials administration projects are either regional or national in scope.

The major ITS/CVO credentials administration projects are either regional or national in scope. Individual states are taking steps to streamline their internal operations, as demonstrated by recent credentials reengineering projects in Colorado and Minnesota and the development of intrastate one-stop shopping capabilities in states such as Iowa and New Mexico. However, the most significant ITS/CVO credentials projects, which address issues such as interstate data and funds exchange and multistate permitting, are at the regional and national levels. For example:

- The IFTA, the IRP, and the Single-State Registration System (SSRS) are base-state agreements that involve nearly all states in the nation.
- Other initiatives, such as a base-state agreement for hazardous materials permitting and clearinghouses for the IFTA and the IRP, are being tested by small groups of states, but are designed for national coverage.
- One-stop shopping capabilities are being developed primarily at the state or regional levels, although a national system is a long-run possibility.
- Oversize/overweight permitting systems are being developed at the regional level, reflecting the tendency for most of these trips to be less than 200 miles in length.

Electronic Registration Operational Concept



Electronic Registration and Tax Filing

Several projects are developing the capability for carriers to register vehicles or file tax reports electronically, building on the success of the past two decades in stream-lining administrative procedures.

The experience with the IRP, the IFTA, and other credentials programs has demonstrated that the strategic use of information systems and electronic transactions could bring further efficiency gains. Initiatives are underway in the following areas:

- The I-95 Corridor Coalition, a consortium of public and private transportation agencies representing 12 Northeast states, is developing a regional **electronic registration** system. The system will enable motor carriers to register electronically with state motor vehicle agencies, either directly or through third-party service providers. A two-year operational test will begin in early 1997.
- **The Automated Mileage and Stateline Crossing Operational Test (AMASCOT)**, completed in late 1995, demonstrated and evaluated technology to automate the filing of motor carrier mileage and fuel reports. This project, which involved Iowa, Minnesota, and Wisconsin, focused on improving the reporting of data to IFTA and IRP base jurisdictions. The technology evaluated included an onboard computer system; a mobile communications system; and a global positioning system to track truck movements, locate state line crossings, and track mileage. A commercial system has been proposed based on the test results.

Base-State Agreements

Credentials	Agreement	Participants	Status
Vehicle registration	International Registration Plan (IRP)	All states mandated to join by September 30, 1996	Operational
Fuel use taxes	International Fuel Tax Agreement (IFTA) Regional Fuel Tax Agreement (RFTA)	All states mandated to join by September 30, 1996 ME, NH, VT	Operational Will disband and join the IFTA
Operating authority/ proof of insurance	Single-State Registration System (SSRS)	42 states (all states that require operating authority)	Will be combined with USDOT and former ICC systems
Oversize/overweight permits	New England Transportation Consortium (NETC) Agreement Northeast Oversize/Overweight Permitting Agreement (NOOPA) Southeastern States Permitting Agreement Western Regional Agreement (WRA)	ME, MA, NH, RI, VT CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT AL, FL, GA, KY, LA, MI, MS, NC, OH, SC, TN, VA, WV AZ, ID, MT, OR, UT, WA	Operational Under development Operational Operational
Hazardous materials Registrations and permits	Alliance Base-State Hazmat Agreement	MN, NV, OH, WV	Two-year pilot test began in 1996

Base-State Agreements

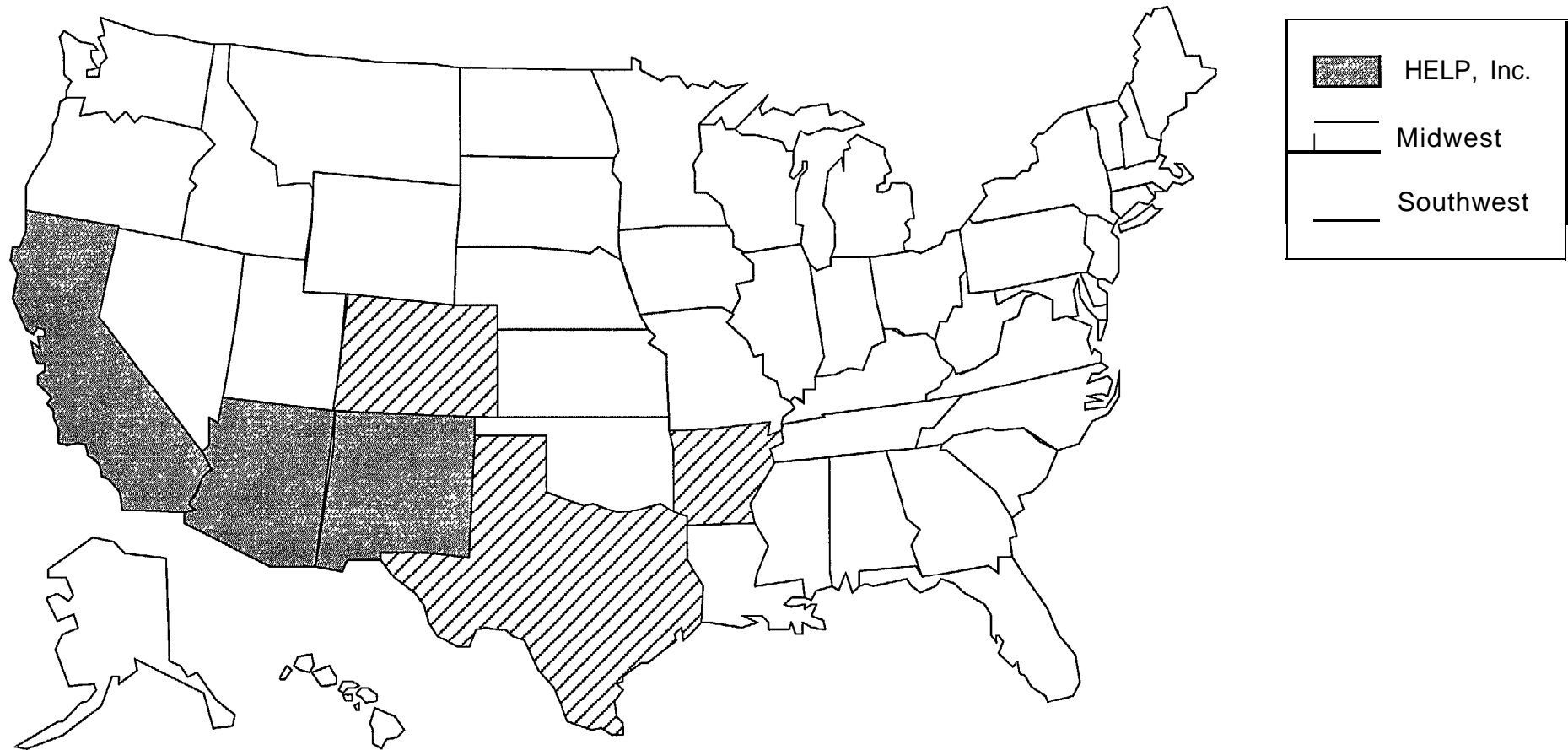
The success of the IFTA and the IRP has prompted similar efforts to develop base-state agreements for other credentials.

A base-state agreement enables a carrier to receive credentials (e.g., registration) from a single state that are valid in all jurisdictions in which the carrier will operate. The experience with the IFTA and the IRP programs has encouraged groups of states to create base-state agreements for the administration of other credentials:

- **Regional oversize/overweight permitting programs** have been developed by 13 states in the Southeast, six states in the West, and five states in New England. A broad program covering all 12 Northeast states is under development. Midwest states proposed and tested a regional program, but a lack of consensus on the procedures prevented full implementation. The ITS/CVO program will continue to encourage the development of these systems, moving toward a national program.
- **The Alliance for Uniform Hazmat Transportation Procedures** is developing uniform procedures and forms for states that register and issue permits to motor carriers for the transportation of hazardous materials. Four states are participating in a pilot test of a base-state program for hazmat registrations and permits. This pilot test will be expanded into a nationwide program.
- Forty-two states are participating in the **Single-State Registration System (SSRS)**, a base-state agreement to administer operating authority regulations and verify insurance coverage. Following the early 1996 sunset of the Interstate Commerce Commission, the SSRS will be combined with the U.S. DOT's carrier registration system and the former ICC licensing system into a single system.

The development and implementation of these base-state agreements will be facilitated through the use of information technologies such as electronic data interchange (EDI) and electronic funds transfer (EFT).

One-Stop Shopping Operational Tests



One-Stop Shopping

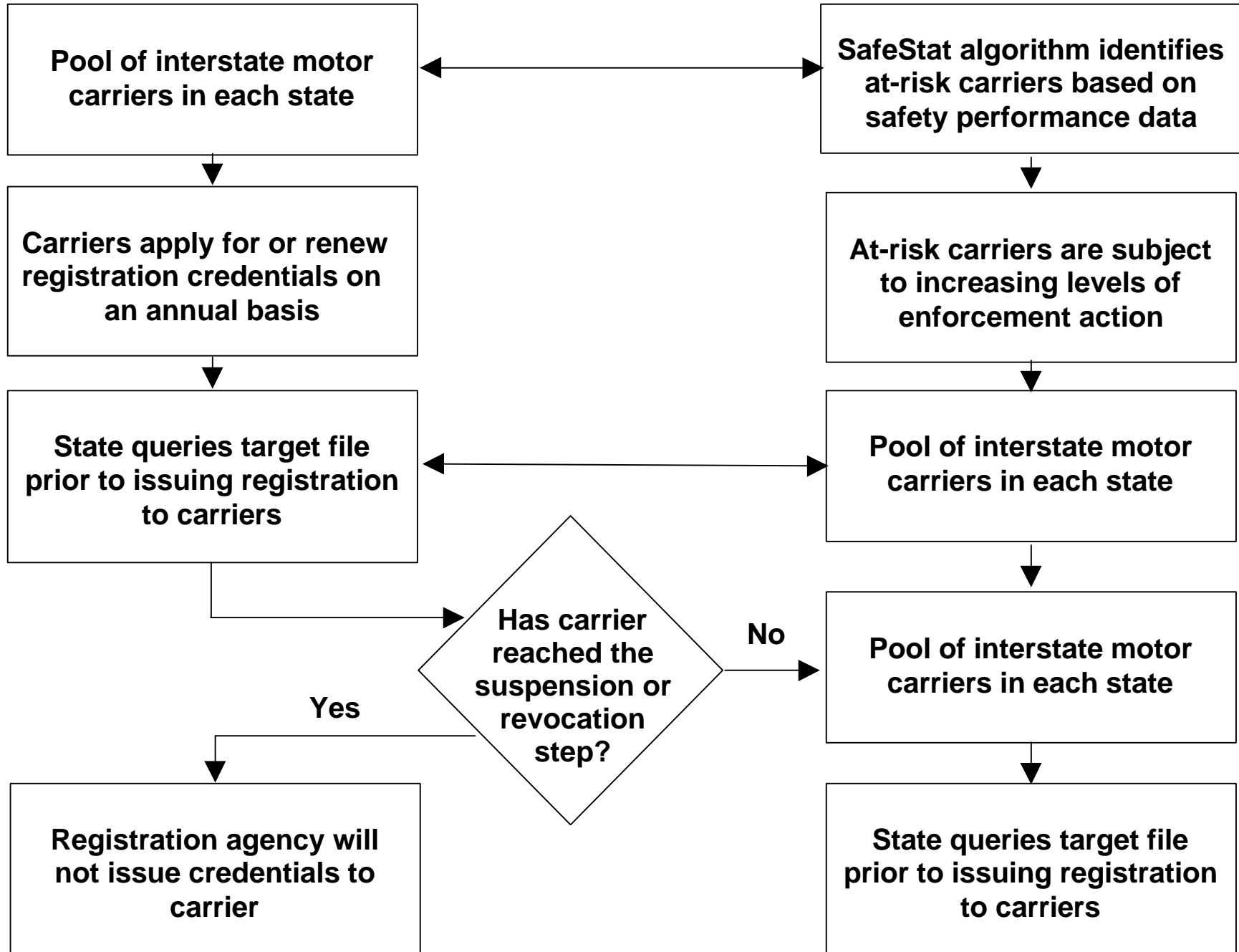
A growing number of states, either independently or cooperatively, are examining methods to streamline the process for issuing multiple types of permits, registrations, and credentials.

The IFTA, IRP, and other credentials projects have addressed the issuance of specific types of credentials. A growing number of states, either independently or cooperatively, are examining methods to streamline the process for issuing multiple types of permits, registrations, and credentials. At the simplest level, many states are developing basic information services (such as toll-free information numbers and electronic bulletin boards) to guide carriers through the credentialing process. A more advanced approach, “one-stop shopping,” enables carriers to obtain all necessary credentials for a single state or a group of states through a single point of contact. This approach may involve housing multiple agencies in a single customer service center, although more often it involves establishing electronic linkages among agencies and states. Operational tests of the one-stop shopping concept are underway in three regions:

- **The HELP One-Stop Electronic Purchase** operational test, involving California, Arizona, and New Mexico, began in early 1996.
- **The Midwest States One-Stop Electronic Purchase** operational test, involving eight Midwest states, is scheduled to begin in the summer of 1996.
- **The Southwest Electronic One-Stop Shopping** operational test, involving Colorado, Arkansas, and Texas, began in early 1996.

These tests are expected to be completed in 1997. The results will provide guidance to the states for the development of carrier automated transaction (CAT) software, and the deployment of regional or national one-stop shopping programs.

Commercial Vehicle Information System



Commercial Vehicle Information System

Linking information systems and agencies within a single state will enable states to use the registration process to keep unsafe, under-insured, or noncompliant vehicles off the road.

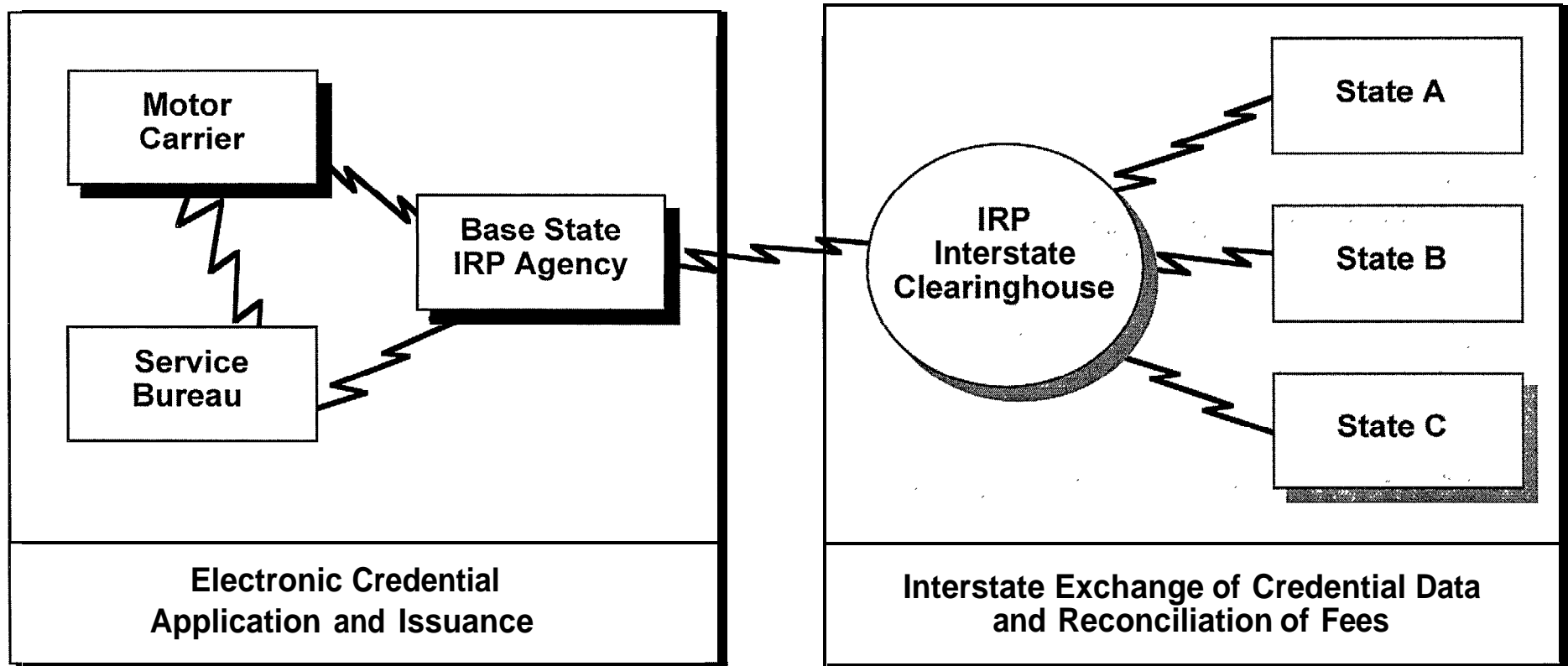
The market for interagency data exchange within a single state is new. Most motor carrier agencies do not routinely exchange or correlate data on individual motor carriers. Studies have indicated that the need for ITS/CVO applications to address this problem is more immediate than the need for improving motor carrier/agency transactions.

The major interagency data exchange initiative today is the **Commercial Vehicle Information System** (CVIS), a multistate effort to determine the feasibility of linking the vehicle registration process to safety performance monitoring and enhancement. The objective of the CVIS is to improve highway safety by denying registration to unsafe carriers. The CVIS will extend the value of the information collected by enforcement officers by using that information in the registration process.

Once developed, the CVIS will provide the state agencies responsible for commercial vehicle registration with automated and timely access to the information on the safety fitness of a carrier. In this manner, enforcement agencies can make recommendations to the registration agency regarding whether the registration should be suspended or revoked. A pilot test is underway in five states: Colorado, Indiana, Iowa, Minnesota, and Oregon.

The CVIS project is of critical importance to the ITS/CVO program in particular and to the motor carrier safety program in general. If the CVIS project is successful, the demand for interagency electronic data interchange will expand rapidly. The registration agency eventually could link with the agencies responsible for fuel tax administration, insurance verification, and special permitting to ensure that carriers with a history of compliance violations cannot renew their vehicle registration. In this way, information systems can be used to shift much of the enforcement burden from the roadside to the desk.

Multistate Clearinghouse Operational Concept



Multistate Clearinghouses

Linking information systems among states will improve the interstate data and funds exchange.

A key objective of the national ITS/CVO program is the development of clearinghouses for the IFTA, the IRP, and other credentials. In a clearinghouse, states would access a single database to process tax returns, calculate fees, transfer funds, resolve discrepancies, and maintain and distribute supporting information. Each state would transmit credentials information and fees to the clearinghouse, which periodically would summarize account information, compute the net fees due to each jurisdiction, and distribute the information and fees to participating states.

Several projects are contributing to the improvement of interstate IFTA and IRP transactions:

- Under the auspices of the National Governors' Association, the national **Base State Working Group on Uniform Motor Carrier Procedures (BSWG)** is overseeing the expansion of the IFTA and the IRE. The BSWG is conducting a six-state pilot test of fuel tax data sharing via EDI.
- The New York State Department of Taxation and Finance is developing a multijurisdictional **Regional Processing Center** that will support all IFTA transactions among states and between states and motor carriers. Seventeen states are participating in the system. In the future, this system may be extended to include IRP transactions.
- The AAMVA is developing an **IRP clearinghouse**. Eleven states will participate in a pilot test of the clearinghouse, which is expected to begin in the fall of 1996. At least 30 states are expected to participate once the clearinghouse becomes operational.
- IFTA, Inc. is developing an **IFTA clearinghouse**. Five states will participate in a pilot test of the clearinghouse, which is expected to begin in late 1996. At least 40 states and Canadian provinces are expected to participate once the clearinghouse becomes operational.

ITS/CVO Electronic Screening Program Area

- Objective
 - Improve the screening of vehicles by roadside enforcement operations
 - » Identify carriers, drivers, and vehicles operating unsafely or illegally
 - » Reduce the frequency and duration of stops for safe and legal carriers
 - » Increase reliance on mobile enforcement
- Expected benefits
 - Reduced delays for compliant carriers
 - Decreased risk of accidents resulting from traffic queues at inspection sites
 - Improved freight mobility

Electronic Screening

ITS/CVO screening projects seek to reduce the delays experienced by safe and legal carriers at weigh stations, international border crossings, and other inspection sites.

ITS/CVO screening projects seek to ensure that only safe and legal commercial vehicles are traveling on U.S. highways. This requires the verification of compliance with size, weight, credentials, and safety regulations. Current roadside enforcement takes place primarily at fixed sites – weigh stations, ports-of-entry, and international border crossings – although increasing numbers of states are using mobile enforcement. Current roadside enforcement operations are inefficient:

- Most fixed sites are not equipped to handle current traffic volumes, resulting in congestion at weigh stations and international border crossings that unnecessarily penalizes compliant carriers and impedes freight movement.
- Most credentials and weight inspection takes place at fixed sites, which noncompliant carriers can evade by taking detours or traveling during off hours.
- Limited availability of credentials status information at the roadside causes inspectors to focus on the existing paper credentials rather than on the confirmation of payments and renewals.

The objective of commercial vehicle screening projects is to improve these roadside enforcement operations. The primary benefit of these projects will be reduced delays for motor carriers, which will improve freight mobility and reduce delivery costs. In addition, the decrease in the use of weigh stations will reduce the number of accidents resulting from traffic queues outside stations or from vehicles existing and re-entering the mainline highway.

Electronic Screening Projects

Technical Approach

	Automation	Networking	Process Change
High-Speed/Portable WIM Research	●		
HELP, Inc. PrePass	●	●	●
Advantage CVO MACS	●	●	●
Oregon Green Light	●		●
Multijurisdictional Automated Preclearance System (MAPS)	●	●	●
I-95 Electronic Clearance	●		
International Border Clearance	●	●	●

Electronic Screening (continued)

ITS/CVO electronic screening projects are enhancing enforcement procedures at weigh stations, ports-of-entry, international border crossings, and other sites. The long-term vision is to enable trucks and buses to move as freely as passenger cars.

The underlying approach to the ITS/CVO electronic screening program is to enable commercial vehicles to be screened electronically at weigh stations, border crossings, and other inspection sites. This capability will be achieved through a series of research projects, operational tests, and deployment activities, as follows:

- **Automation** - Develop the technologies for automated vehicle weighing and identification, which can screen vehicles at mainline speeds. Develop advanced portable scales.
- **Networking** - Develop information systems linking roadside readers and weigh station computers with state and regional credential databases.
- **Process Change** - Create “transparent borders,” allowing travel by safe and legal carriers through multiple states – or across international borders – with no more than a single stop. Use mobile units to catch drivers attempting to evade fixed sites and to increase enforcement capabilities in urban areas.

Electronic Screening Projects

Stage of Development

	Research/ Planning	Testing	Deployment
High-Speed/Portable WIM Research	●		
HELP, Inc. PrePass			●
Advantage CVO MACS		●	
Oregon Green Light			●
Multijurisdictional Automated Preclearance System (MAPS)	●		
I-95 Electronic Clearance	●		
International Border Clearance	●	●	

Electronic Screening (continued)

The most advanced ITS/CVO projects are in the areas of electronic screening.

The greatest progress to date in ITS/CVO has occurred in automated screening programs, particularly the Heavy-vehicle Electronic License Plate [HELP] and Advantage CVO Mainline Automated Clearance System (MACS) projects. The key components of electronic screening programs – weigh-in-motion (WIM) technologies, vehicle-to-roadside communications (VRC), automatic vehicle classification (AVC), communications systems, and information management technologies – are available and being deployed by state motor carrier regulatory agencies.

Additional markets for ITS/CVO services are now developing. ITS/CVO screening technologies are being applied at international border crossings to improve freight movement with Canada and Mexico. In addition, interest is growing in the development of high-speed and portable WIM scales to facilitate mobile enforcement.

Electronic Screening Projects

Geographic Scope

	State	Regional	National	International
High-Speed/Portable WIM Research	●	●	●	
HELP, Inc. PrePass		●		
Advantage CVO MACS		●		
Oregon Green Light	●			
Multijurisdictional Automated Preclearance System (MAPS)		●		
I-95 Electronic Clearance		●		
International Border Clearance				●

Electronic Screening (continued)

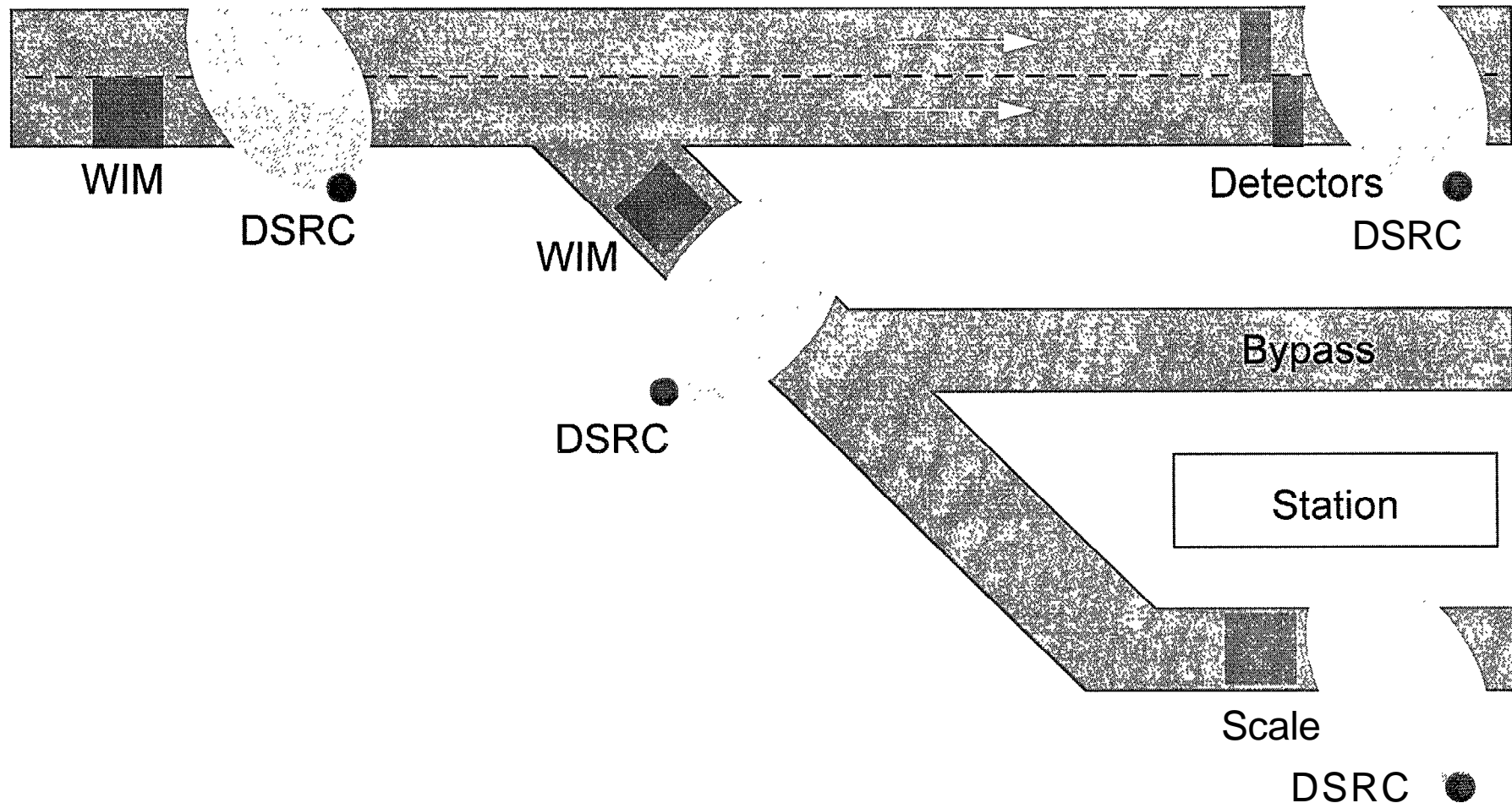
Most ITS/CVO screening projects are regional in scope, because most fleets operate at a local or regional level.

Most ITS/CVO screening projects are regional in scope, because most fleets operate at a local or regional level. The 1992 Truck Inventory and Use Survey indicated that about 60 percent of trucks with greater than 10,000 pounds gross vehicle weight rating (GVWR) operate within 50 miles of their base of operation. An additional 24 percent operate from 50 to 200 miles of their base.

The initial ITS/CVO screening projects were organized around major Interstate highway corridors to give the projects a strong marketing image and to provide a rationale for cooperative efforts among the states. The HELP project began as a demonstration of electronic screening technologies along Interstates 5 and 10 in the Western United States. In the Eastern United States, the Advantage CVO Partnership has developed similar technologies along Interstate 75 from Michigan to Florida.

However, because most truck trips use a network of highways rather than a single corridor, the orientation of automated screening programs is shifting from highway corridors to geographic regions. This trend is evident from the development of HELP Inc.'s PrePass service, the I-95 Corridor Coalition's endorsement of an electronic clearance operational test, and the recent plans to develop the Multijurisdictional Automated Preclearance System (MAPS) in the Northwest using technologies developed in Oregon's Green Light operational test.

Automated Screening Operational Concept



Automated Weigh Station Screening

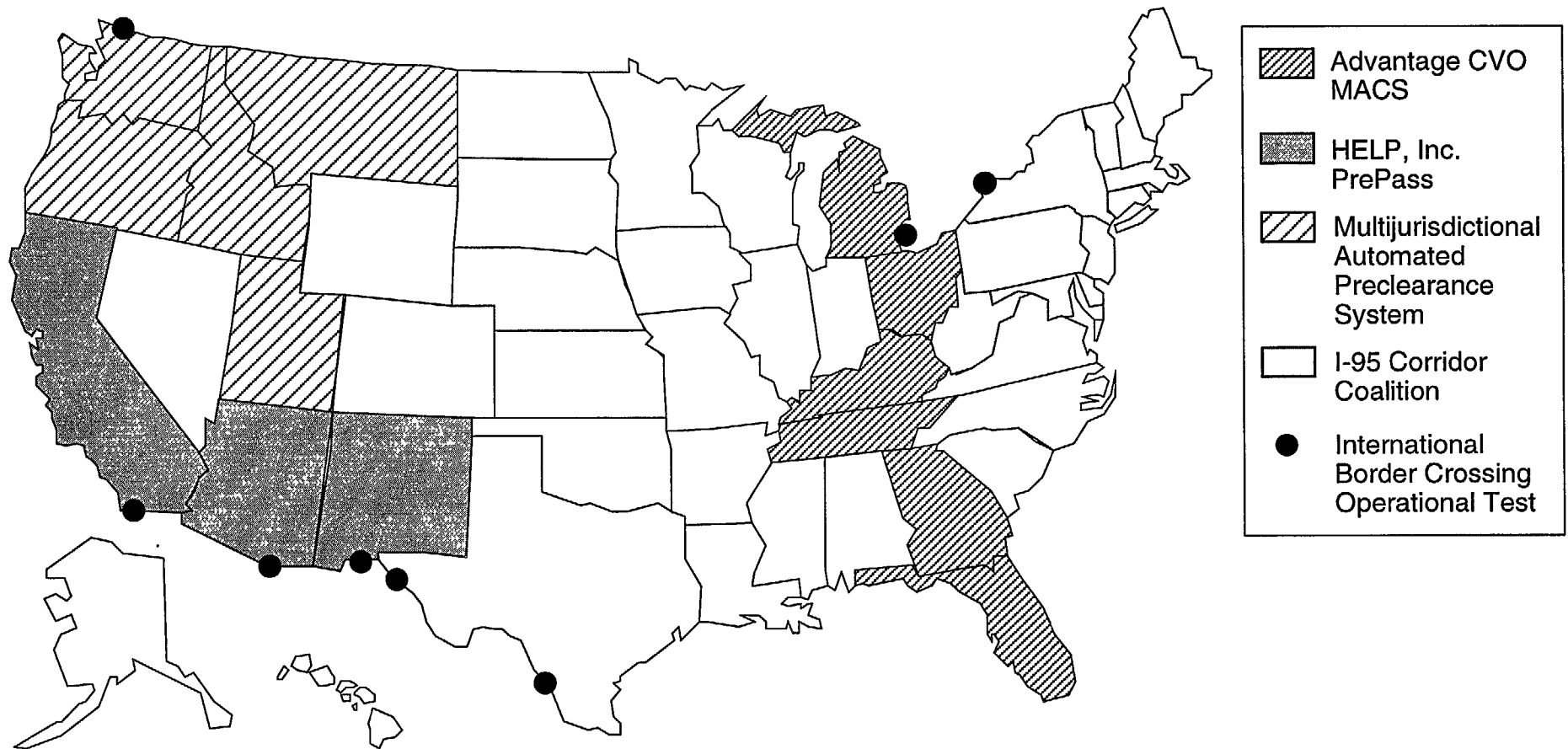
Electronic screening capabilities have been tested and deployed by consortia of states in the West, Northwest, and Great Lakes/Southeast regions, as well as by individual states such as Oregon.

The most advanced ITS/CVO service is automated screening. Four consortia of states have been developing and deploying regional electronic screening systems:

- **HELP, Inc.**, a public/private corporation, was formed in 1993 to finance and implement an operational electronic clearance system in the Western United States. HELP, Inc. provides a menu of pay-per-use services to carriers and states. The HELP PrePass service weighs trucks at highway speeds and verifies their credentials without stopping. As of January 1997, HELP PrePass operates at 19 weigh stations in California, Arizona and New Mexico.
- **The Advantage CVO Partnership** was established in 1990 to provide electronic clearance services along Interstate 75 from Ontario to Florida. Six states are participating in an operational test of the Mainline Automated Clearance System (MACS), which is available at 29 weigh stations.
- **The Multijurisdictional Automated Preclearance System (MAPS)** was established by four Northwest states in 1997. This system is expected to issue more vehicle transponders than HELP or MACS.
- **The I-95 Corridor Coalition** has endorsed an operational test that will demonstrate mainline clearance at a weigh station in Maryland or Virginia and evaluate mobile enforcement systems in several states in the corridor. A two-year operational test will begin in 1997.

In addition, several states are developing and testing automated screening capabilities on an individual basis. The most far-reaching example is in Oregon, where the **Green Light** project will provide mainline automated clearance at 15 weigh stations and automated screening at 35 other inspection sites in the state. It is anticipated that electronic screening activities will be extended to encompass other states as the concept is further refined.

Electronic Screening Projects



International Border Clearance

The ITS/CVO program will achieve “transparent borders” with Canada and Mexico by using advanced technologies to communicate clearance information.

The North American Free Trade Agreement (NAFTA) will bring full international trucking to the United States, Canada, and Mexico by January 2000. In response, the ITS/CVO program is attempting to achieve “transparent borders” among the three nations by using automated technologies to communicate clearance information. The systems will allow selected vehicles to cross the border without stopping, or with expedited inspections. The systems will address customs, immigration, credentials, and safety requirements.

The capability for international electronic border clearance is being developed through a series of operational tests at major border crossings in New York, Michigan, Washington, Texas, New Mexico, Arizona and California. These operational tests are demonstrating the feasibility of systems including dedicated lanes for equipped vehicles, DSRC for identification of the vehicle and cargo, voice recognition for identification of the driver, WIM, electronic toll collection, vehicle emissions monitoring, and global positioning systems. The tests also are developing information systems to support border clearance activities. The tests are scheduled for completion in 1997, after which the ITS/CVO program will develop a general process that can be applied at all border crossings.

Carrier Operations

- Objective
 - Reduce congestion costs for motor carriers
- Expected benefits
 - Reduced delay due to congestion, incidents, and other roadway conditions
 - Reduced risk of accidents
 - Improved incident response capability
 - Improved freight mobility
 - improved carrier productivity

Carrier Operations

ITS/CVO carrier operations projects seek to reduce the time lost by motor carriers to congestion.

Traffic congestion impedes the flow of regional and interstate freight on the national highway system. Traffic congestion reduces carriers' ability to meet customer commitments and affects the competitiveness and profitability of carriers and their customers. Congestion also increases the risk of accidents and their associated costs to individuals and businesses.

Most traffic management applications are oriented toward passenger cars, although their benefits are available to commercial vehicles as well. These applications include freeway surveillance and control systems, as well as incident management programs to reduce the congestion associated with accidents, vehicle breakdowns, and similar events. These services are important elements of the ITS "core infrastructure" for metropolitan areas. The U.S. DOT has set a goal of deploying this core infrastructure in the 75 largest metropolitan areas by 2005.

The ITS/CVO program is building upon this extensive base of activity by developing traffic management services targeted to commercial vehicles. Because most traffic management systems are oriented primarily toward passenger cars, they cannot address the unique routing and dispatching restrictions and service demands faced by motor carriers.

Carrier operations projects can be classified into three broad categories: fleet and vehicle management systems; traveler information systems; and hazardous materials incident response systems.

Carrier Operations Projects

Technical Approach

	Automation	Networking	Process Change
Fleet and Vehicle Management Systems	●		
I-95 TruckDesk		●	●
Operation Respond		●	
Tranzit Xpress/HAZMAT FMMS		●	●

Carrier Operations (continued)

The ITS/CVO carrier operations program will improve freight mobility by linking motor carrier operations to real-time traffic information.

The underlying approach to the ITS/CVO carrier operations program is to increase the flow of information about carrier operations and roadway conditions among carriers, state agencies, and emergency responders.

- **Automation** - Encourage the use of fleet and vehicle management systems to support vehicle routing and dispatching, shipment tracking, and driver/dispatcher communications.
- **Networking** - Develop an information exchange network with regional “brokers” to collate, filter, and repackage traffic information tailored to motor carrier needs. Provide emergency responders with information on the cargoes of vehicles involved in hazardous materials spills.
- **Process Change** - Provide real-time information to support dynamic routing and dispatching procedures.

Carrier Operations Projects

Stage of Development

	Research/Planning	Testing	Deployment
Fleet and Vehicle Management Systems	●	●	●
I-95 TruckDesk	●		
Operation Respond		●	
Tranzit Xpress/HAZMAT FMMS		●	

Carrier Operations (continued)

Fleet management systems are one of the most advanced areas of the ITS/CVO program, while traffic management systems are the least developed.

Fleet management systems are one of the most advanced areas of the ITS/CVO program. Carriers have made great progress at deploying mobile communications systems, onboard computers, navigation systems, and similar technologies.

In contrast, traffic management systems are the least developed element of the ITS/CVO program. Two operational tests of hazardous materials incident response systems are underway, while a test of an advanced traveler information system for motor carriers has been planned. For the most part, however, traffic management systems have been oriented toward passenger cars, and often are not tailored to meet the needs of motor carriers.

Fleet and Vehicle Management Systems

System	Application	Current Major Uses
Electronic Trip Recorder/ Onboard Computer	Monitors and records Information on the performance of the vehicle or driver	Large or private fleets; carriers with national or regional operations
Routing and Dispatching Software	Determines the most direct route between an origin and destination, in some cases based on real-time traffic information	Carriers operating large numbers of vehicles over variable routes; national fleets
Communications System	Provides communication among the carrier's terminal, dispatch office, and vehicles	Large fleets, especially those with time-sensitive cargo and variable routes
Automatic Vehicle Location	Enables real-time identification of a vehicle's location relative to a map; assists with shipment tracking and real-time routing	Truckload carriers operating over long distances

Fleet and Vehicle Management

The private sector has led the development of fleet and vehicle management technologies.

Fleet management systems provide fleet managers with information about the use and deployment of their trucks and facilitate timely and cost-effective trucking services. Most of the advances in this area have occurred through market-driven research and investment, rather than publicly funded projects.

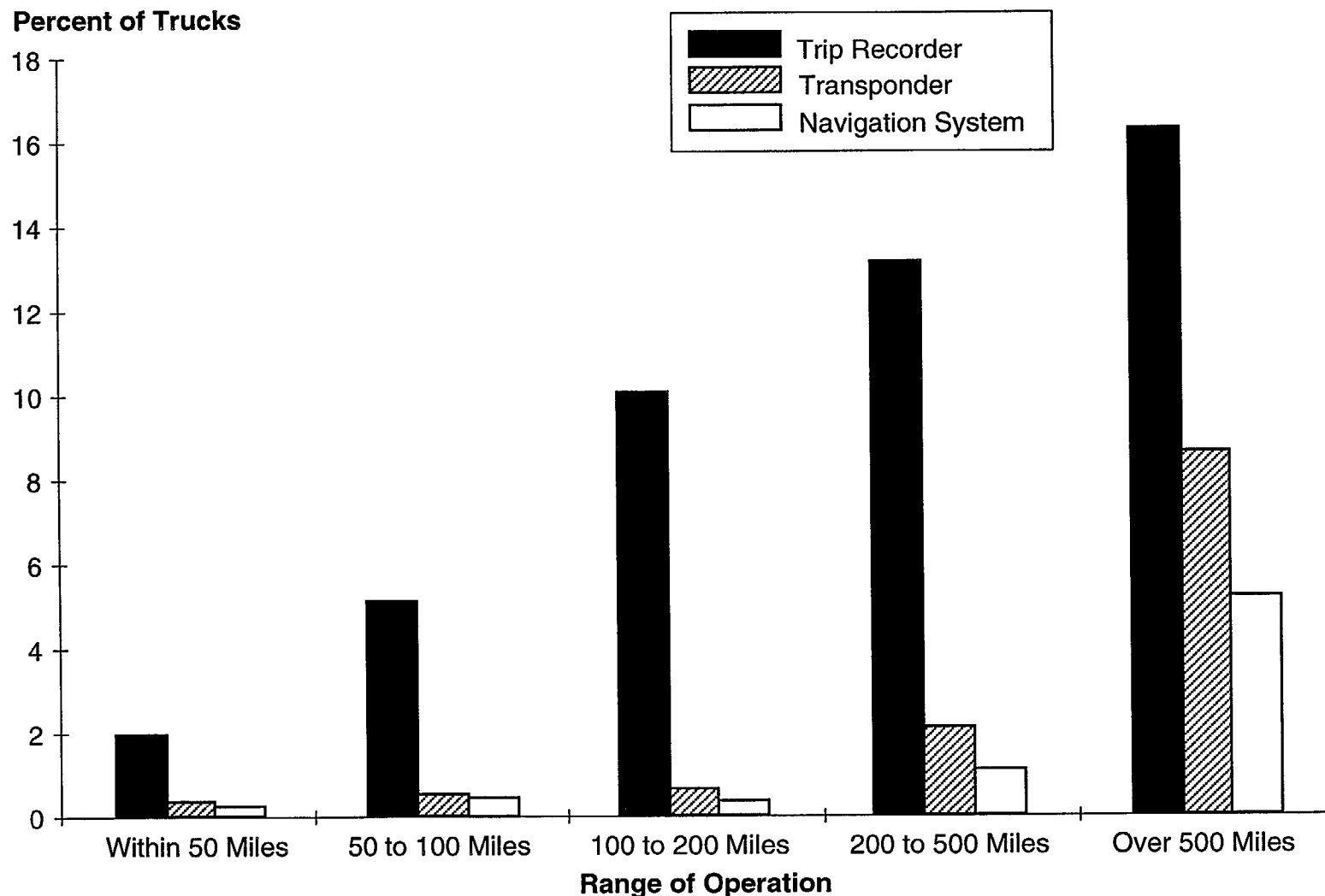
The major categories of fleet management technologies include the following:

- **Electronic trip recorders and onboard computers** that automatically monitor and record information on the performance of the truck, engine, and ancillary equipment, and allow the driver to log fuel purchases, hours of service, and other information.
- **Routing and dispatching systems** that seek to maximize fleet efficiency and reduce operating costs by determining the most direct route between an origin and a destination, or among a series of stops.
- **Communications systems** that provide a link between a carrier's terminal, dispatch sites, and vehicles. These systems include radio digital broadcast systems, mobile phones, onboard facsimiles, satellite transceivers, and two-way data text communications.
- **Automatic vehicle location systems** that combine automatic vehicle identification with the location of a vehicle relative to a map. These systems allow a driver to receive real-time routing and navigation advice in response to route changes and traffic conditions.

The number of carriers and trucks using fleet management systems and other ITS technologies has increased rapidly, with a nearly 50-fold increase between 1987 and 1992. In most cases, large, for-hire truckload carriers with national operations have been the first fleets to adopt and deploy these technologies. Sales to regional carriers and local pickup-and-delivery operators are growing.

Fleet and Vehicle Management Systems

Market Penetration by Geographic Range of Operation, 1992



Source: Truck Inventory and Use Survey. Data are shown for trucks with greater than 4 540 kg (10,000 lb) GVWR.

Fleet and Vehicle Management (continued)

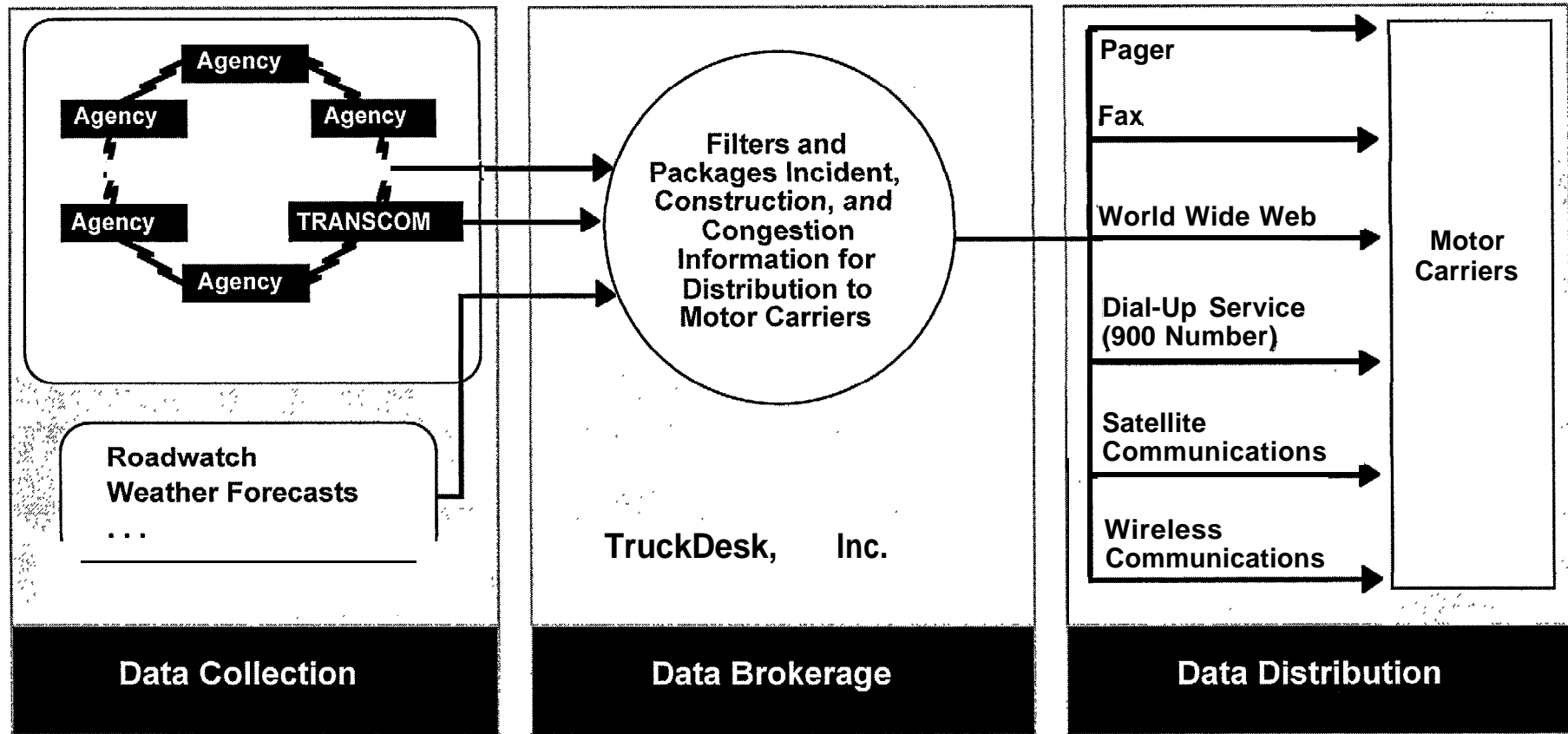
The Federal role in fleet and vehicle management should focus on defining standards and disseminating information.

The FHWA is sponsoring research to define the appropriate role of the Federal government, and the ITS program in particular, in fleet and vehicle management. Preliminary results of the **Commercial Vehicle Fleet Management and Information Systems** project suggest that the Federal role should be minimal. This project now is exploring the application of ITS technologies to intermodal freight transportation.

The public sector should support fleet management activities, but, as in the past, most progress will occur through market-driven, private sector efforts. The ITS/CVO program may include the following priorities:

- Encourage and support industry efforts to define electronic data interchange standards and protocols and to integrate fleet management systems with existing motor carrier administrative systems and business logistics management systems;
- Collect and disseminate information on the current market penetration and potential applications of fleet management technologies;
- Examine ways to stimulate private sector investment in fleet management technologies; and
- Provide technical expertise as appropriate.

TruckDesk Operational Concept



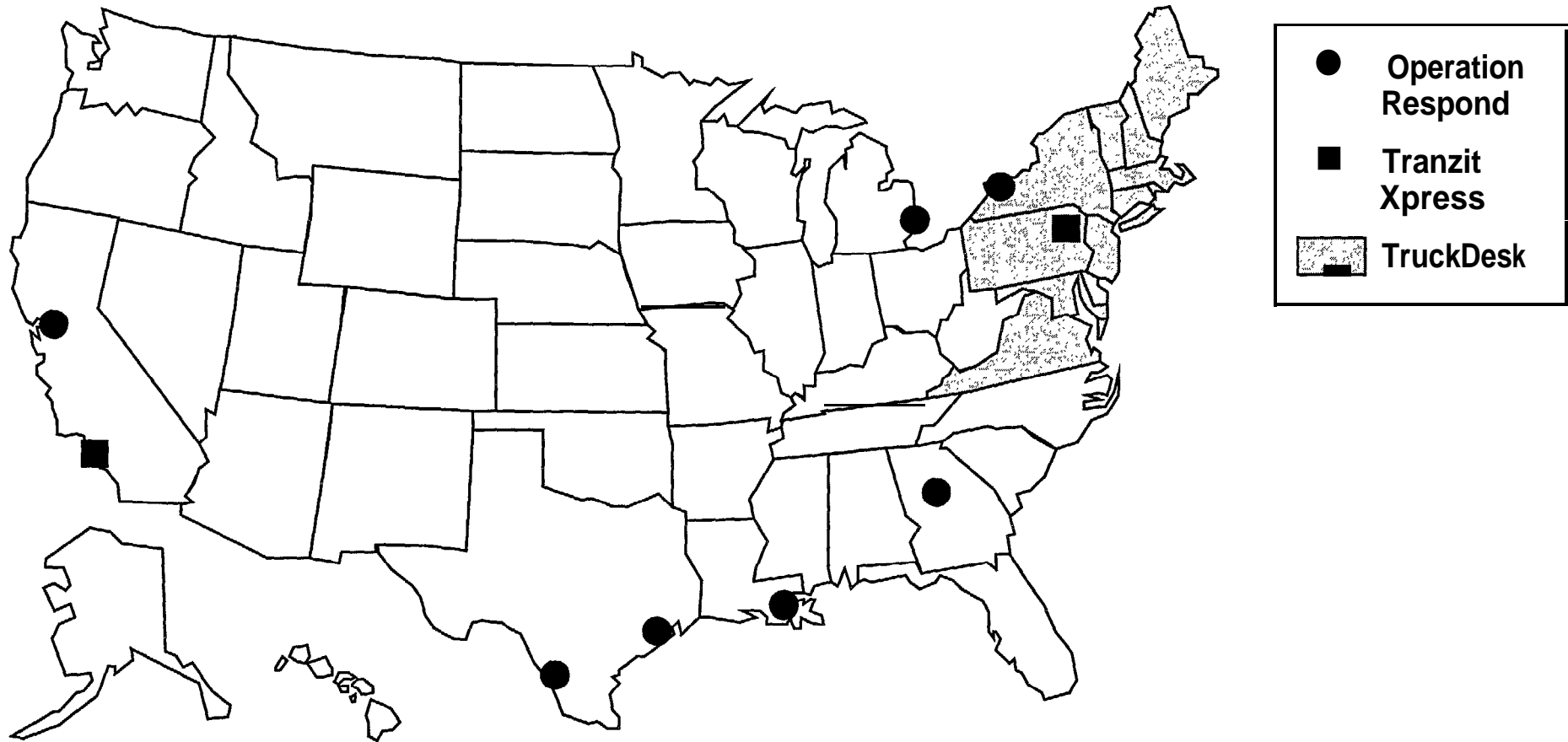
Commercial Vehicle Traveler Information Systems

Access to information on congestion, incidents, weather, and routing restrictions will help motor carriers to optimize their routing and dispatching.

Three-quarters of all truck trips are under 200 miles, and most are clustered around the major population and distribution centers (such as Boston, New York, Atlanta, Chicago, Denver, Dallas, Los Angeles, and Seattle). However, over half of these truck trips extend outside of the large metropolitan areas that currently planned advanced traffic management and traveler information systems will cover. Because trucks generally are restricted to a limited network of highways, dispatchers and drivers need information on highway incidents, congestion, and construction closures well in advance of the truck's arrival into a congested area if they are to divert to alternative routes.

The Transportation Operations Coordinating Committee (TRANSCOM), which collates and disseminates information about highway conditions to transportation agencies in the New York-New Jersey metropolitan area, ran a pilot program with a handful of carriers to test the motor carrier market for traffic information. The pilot was successful, and will be expanded by the I-95 Corridor Coalition into a corridor-wide test. The Coalition's TruckDesk operational test will establish a public/private organization to collate, package, and disseminate information on highway travel conditions to motor carrier dispatchers and drivers. Its objective is to enhance motor carrier safety and operating efficiency through better routing and dispatching based on accurate and timely information on highway construction, incidents, congestion, and weather. If this test is successful, it may become a model for other regions.

Carrier Operations Projects



Hazardous Materials Incident Response

Particular attention is being devoted to developing systems to identify hazardous materials that are involved in incidents.

Incidents involving hazardous materials are a special concern because of the risk they pose to respondents, motorists, and the environment. Two projects are examining ways to track and exchange information about hazardous materials shipments that are involved in accidents and other incidents.

- **Operation Respond** is developing a format for information exchange and computer linkages between railroads, intermodal motor carriers, and emergency responders to speed the flow of information and notification about hazardous materials incidents. Operational tests are being conducted in Contra Costa County, California; Atlanta, Georgia; New Orleans, Louisiana; Detroit, Michigan; Buffalo and Niagara Falls, New York; and Houston and Laredo, Texas.
- The National Institute for Environmental Renewal (NIER) is developing a pilot program for a **Hazardous Materials Fleet Management and Monitoring System (FMMS)**. An operational test known as “Tranzit Xpress” is underway along Interstate 81 in Pennsylvania. The second phase of work will take place near the port of Los Angeles. The project will establish and operate information systems to identify the types of hazardous materials transported by motor carriers. The system will provide information to facilitate the response to incidents involving hazardous materials shipments, either directly or through linkages to other systems.

The results of these tests may lead to the development of a hazmat response system with a broader, perhaps national, coverage.

CVISN Initiative

- Objective
 - Develop technical infrastructure to support widespread ITS/CVO deployment
- Expected benefits
 - More efficient data interchange
 - Ability to improve credentials administration, safety assurance, and enforcement procedures
 - Reduced administrative burden for regulatory compliance

CVISN Initiative

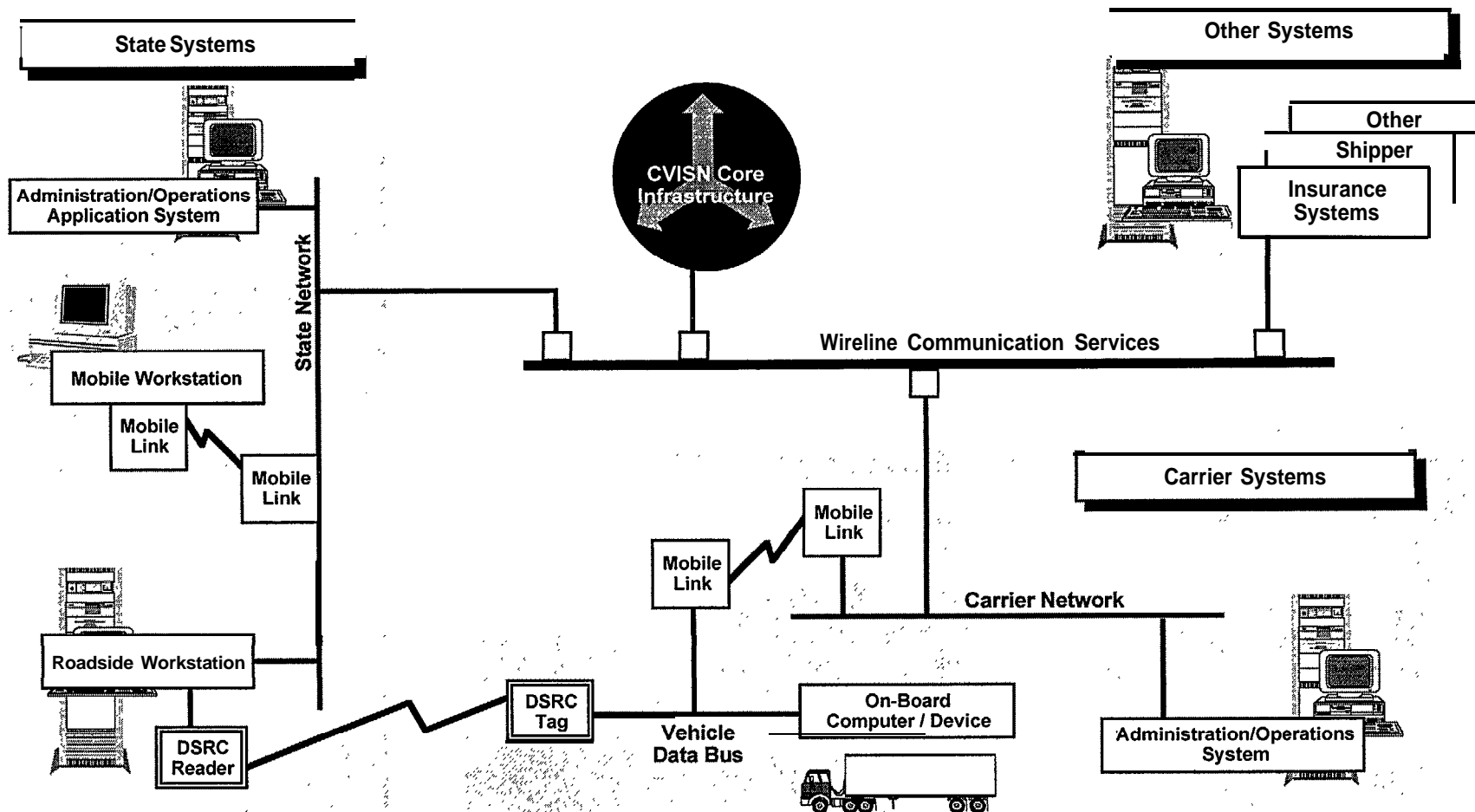
The CVISN project is developing a blueprint for a national CVO architecture, which will provide the framework necessary for cooperation and growth.

The ITS/CVO program is investing in the development of the technical infrastructure that will support the widespread deployment of ITS/CVO services. The Commercial Vehicle Information Systems and Networks (CVISN) initiative is developing a blueprint for a national CVO architecture and a framework for future cooperation and growth. Through the CVISN, the ITS/CVO program is developing the following:

- Standards, protocols, and unique identifiers to facilitate the electronic data interchange and vehicle-to-roadside communication capabilities that enable most ITS/CVO services.
- Interstate clearinghouses for vehicle registration, fuel tax administration, hazardous materials permits, and other credentials.
- The SAFER system to provide a much-needed link between existing and planned motor carrier safety information systems.

CVISN

The Collection of Information Systems and Communications Networks that Support CVO



CVISN Initiative (continued)

The CVISN will enable the interchange of data among public agencies, motor carriers, and third-party service providers.

The CVISN will create a way for existing and new systems to exchange information electronically through the use of standards and commercially available communications systems. The CVISN will provide a fully integrated collection of commercial vehicle information systems operated by the states, the FHWA, carriers, and other stakeholders. Its central vision is that by the year 2005, the vast majority of CVO business transactions will be handled electronically.

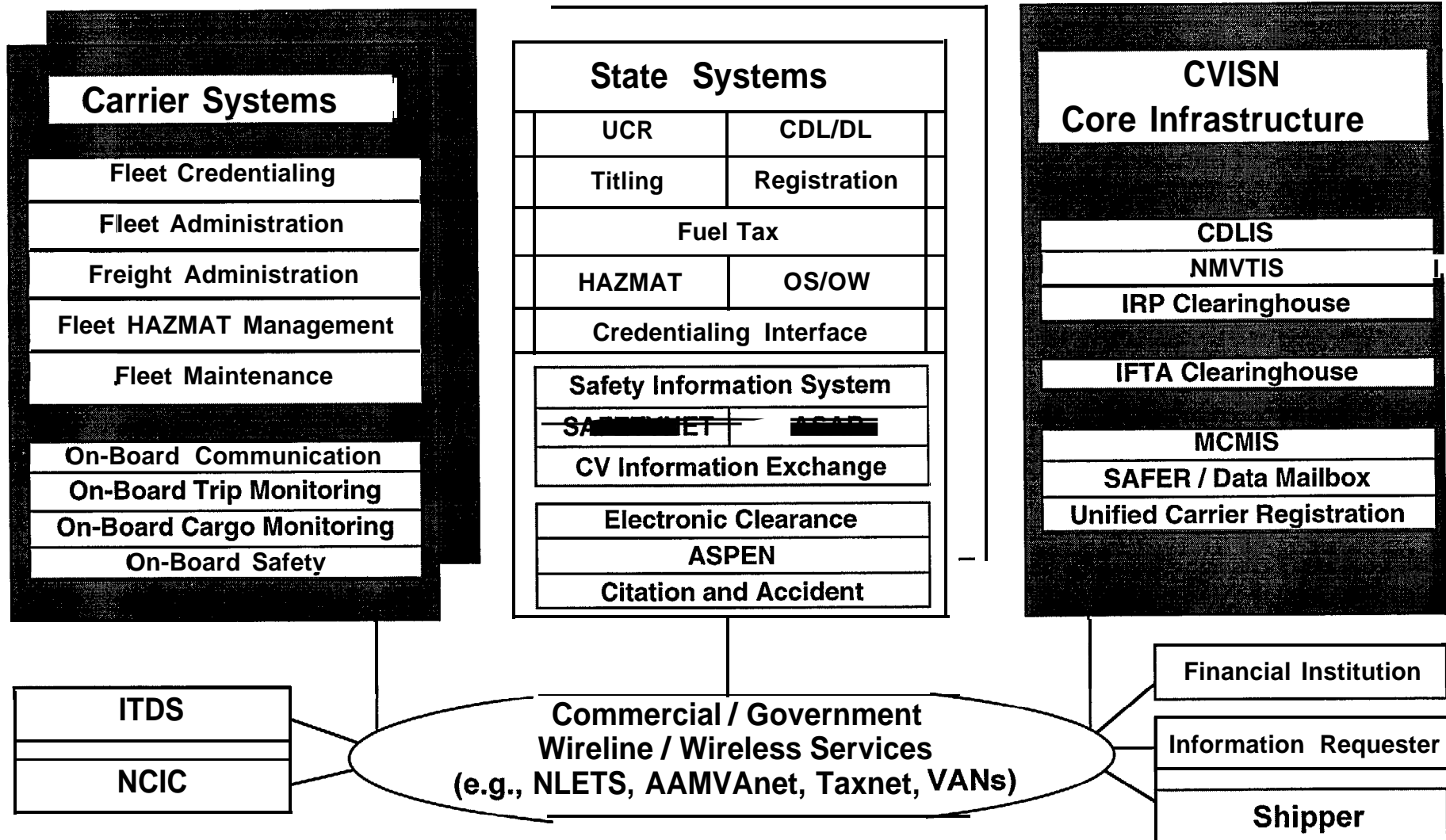
The benefits of the CVISN for state governments are expected to include:

- More efficient data interchange among agencies, carriers, banks, and insurers;
- Electronic access by deskside and roadside personnel to required data; and
- Ability to improve credentials administration, safety assurance, and enforcement procedures.

The benefits of the CVISN for motor carriers are expected to include:

- Reduced administrative burden in regulatory compliance;
- Reduced delay for safe and legal carriers; and
- Uniform state regulatory and enforcement operations across North America.

CVISN System Design



CVISN Initiative (continued)

The CVISN architecture will provide a technical framework for the design and development of actual ITS/CVO systems.

The FHWA has contracted with a team led by the Applied Physics Laboratory at John Hopkins University (JHU/APL) to facilitate the development of the CVISN. The elements of the network have been defined; technical work is underway to develop standards and demonstrate the capabilities.

The CVISN architecture will provide a technical framework for the design and development of actual ITS/CVO systems. The architecture does not describe the design of a specific implementation, which will be determined by individual states or other stakeholders. The architecture has been under development in parallel with the national ITS architecture since 1994.

It is expected that the SAFER system will provide the platform for the more advanced elements of the CVISN. These would include an information exchange network to connect all participants and an information exchange system to contain information on all carriers, vehicles, and drivers.

CVISN Nationwide Deployment Strategy

1994 - 1996

Plan

Architecture and supporting documents

1995 - 1998

Prototype (MD, VA)

Technology and operational demonstration to illustrate and refine concepts

1996 - 1999

Pilot (infrastructure, MD, VA, and 8 other states)

Model deployment of EDI, clearinghouses, SAFER, and state systems compatible with CVISN architecture

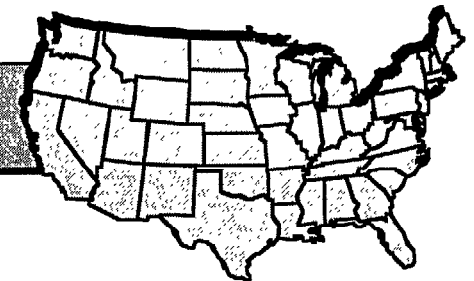
1999 - 2000

Expansion (a few states per region)

Continuing deployment, operation, and maintenance; EDI and DSRC standards

2000 - 2005

Full Deployment (all interested states)



CVISN Initiative (continued)

The CVISN will be deployed in multiple steps, moving from model deployment in a handful of states to a goal of complete nationwide deployment by 2005.

The CVISN program is proceeding in five major steps:

- **Plan** – The first stage, which is nearly complete, is developing the management plans and technical framework necessary to coordinate the subsequent phases of the project.
- **Prototype** – A prototype test in Maryland and Virginia began in early 1996. The prototype will demonstrate the technology and refine the operational concept.
- **Pilot** – A pilot test involving eight states in addition to Maryland and Virginia began in late 1996. The pilot test will deploy a “core infrastructure” of multistate information systems and clearinghouses.
- **Expansion** – Deployment will expand from the pilot states to other states in each major CVO region.
- **Full Deployment** – Nationwide deployment among all interested states is expected to occur by 2005.

CVISN Initiative (continued)

The CVISN pilot program will be a critical step in the nationwide deployment of ITS/CVO capabilities.

The objective of the CVISN Model Deployment initiative is to move the CVISN architecture from the concept stage into operation. It is intended to be a cooperative effort of the FHWA, states, government and industry associations, and motor carriers. The scope of the pilot will include the following activities:

- Development of the CVISN core infrastructure, which refers to a collection of planned or operational multistate information systems, including the CDLIS; the MCMIS; SAFER; and the IFTA, IRP, hazardous materials, and oversize/overweight clearinghouses. Through the pilot, these systems will be brought into compliance with the CVISN architecture and standards.
- Participation of eight pilot states that are committed to enhancing internal information systems and implementing applicable ITS/CVO services in a manner consistent with the CVISN architecture. The pilot states are California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, and a team of Oregon and Washington.
- Involvement of representative carriers from each pilot state in planning, implementation, and operation.
- Development of formal standards for EDI and DSRC.
- Demonstration of the synergistic effects of providing integrated ITS/CVO services.
- Preparation for full nationwide deployment of the CVISN.